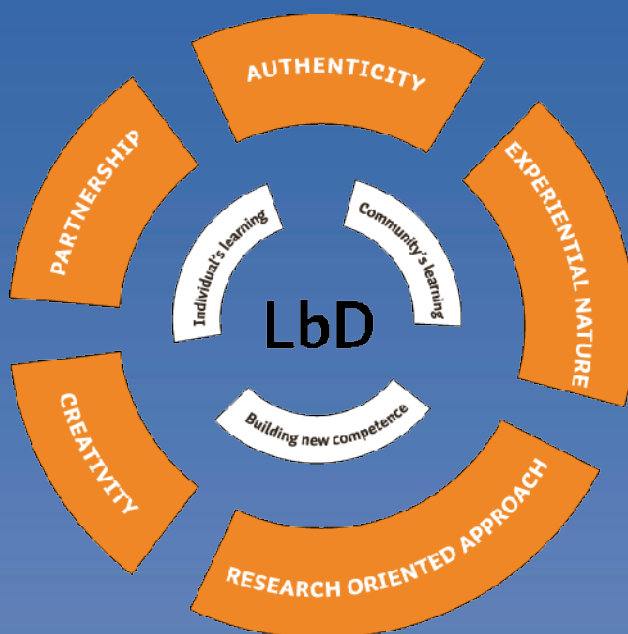


Outi Kallioinen (ed.)

LEARNING BY DEVELOPING – NEW WAYS TO LEARN

2009 Conference Proceedings



**Laurea publications
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**The Learning by Developing –
New Ways to Learn
2009 Conference
Proceedings**

Outi Kallioinen (ed.)

2009 Vantaa

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INTRODUCTION

Universities are to construct the good for their operational environment, and from this perspective it is essential to define also the values on which the good is constructed. The mutual core values for higher education institutions in democratic societies are freedom, equality and social justice. These core values challenge us to reconceptualise the traditional role of the teacher and the learner. In the cultural change of higher education institutions teacher transformation is probably one of the strongest phenomena in the recent years. In teacher transformation the role of the teacher becomes more of a colleague, co-learner, coach and a development partner of the student. During this year's conference we had the possibility to disseminate good practices in teacher transformation from around the world.

The 2nd international Learning by Developing – New Ways to Learn -conference brought together 150 researchers, developers, teachers and students from over 20 countries. The annual conference discusses learning and teaching in higher education, focusing on a different perspective every year. The theme of the conference this year was [Transformative Teaching in Higher Education](#). The conference aimed to present, develop, benchmark and discuss transformative teaching in higher education; the challenges which changing learning culture brings out in teaching, learning and leadership, and the innovative solutions in learning environments and methods. The conference emphasised the integration of teaching and learning, research and development and regional development in higher education. At the conference the knowledge transfer was organized in paper sessions in four thematic workshops and the poster exhibition, during the panel discussion and the dialogical keynote lecture. Altogether there were 54 presentations at the conference.

The four thematic workshops were:

- A. Teaching and guidance
- B. Learning environments
- C. Leadership
- D. Learning culture

Teaching and guidance –workshop focused on teaching practices and activities which are in great change at the moment. The role of the teacher is facing new challenges, especially with the needs to network with working life partners and other stakeholders, the new forms of competence evaluation and managing partnerships in large scale R&D programmes. Student tutoring and guidance is coming more and more important and today there are also new practices emerging in mobile guidance. Transformative teachers are

the change agents to facilitate the implementation of the pedagogical strategies of the higher education institutions.

Learning environments –workshop focused on the social, virtual, physical and ethical aspects in learning. New innovation environments in higher education create new forms of cooperation / partnerships, and the knowledge co-creation in mutual environments has an impact on regional development. New types of interactive and integrative learning environments use social media, new organisational structures and motivation of individuals to succeed. In modern learning environments there is good access to knowledge and information sources and they are well equipped in many ways.

Leadership-workshop focused on the arising challenges in academic leadership and in teacher transformation. Leadership is needed to support and produce quality teaching and learning. The challenges for leadership in transformative teaching deal with the dilemmas of quantity vs. quality and responsibility vs. authority. Transformative teaching is strongly linked to leadership as the role of the student is getting closer to the role of a junior colleague.

Learning culture –workshop focused on change and new elements in the learning culture. The learning culture in higher education is changing towards knowledge co-creation and networked learning, where collaboration is in the focus. The new culture uses learning media and creates learning communities cross borders. There is a need to reconceptualise the idea of learning culture in order to better enhance learning.

This conference publication is divided into four sections according to the workshops and posters and in each section the articles will more profoundly open up the ideas and results that were presented in the short presentation or poster exhibition at the conference. The publication does not cover the entire workshop programme as we could only fit the articles that arrived by due date into this publication.

On behalf of Laurea I wish you enjoyable moments with this conference publication. Hopefully it will give you new thoughts and ideas to be further developed together with your colleagues.

Outi Kallioinen

Development Director, Laurea University of Applied Sciences

I WORKSHOP

Teaching and guidance

1 “Theories as tools” – An innovative course design for teaching theoretical knowledge in an integrative manner

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Abstract. This paper presents an integrative course design for teaching theoretical knowledge for adult learners at the Open University. The course in question dealt with theories of learning and teaching. It was based on the idea of "theories as tools" which highlights that the theories are not a mere abstract entity “up there” to be understood or memorized but that they may be used as tools in order to understand practical situations and that there is a subject using the tool in order to interpret reality. Further, practical experiences and experiential knowledge were taken as the starting point for understanding the theoretical knowledge (“bottom-up”). This way of teaching and learning could be viewed in contrast with the more traditional ways of teaching theories that can be seen to support students in acquiring knowledge, but leave students on their own in terms of *implementing* the theoretical knowledge and bringing together theory and practice. However, implementing integrative pedagogy appeared to require taking into account the transition from traditional to integrative pedagogy and supporting students in taking up new ways of learning that incorporate a different set of assumptions about learning, knowledge and one’s agency. Thus a theoretical perspective dealing with this challenge is also presented.

Supporting students in transition to integrative pedagogy

Integrative pedagogical models have been presented as ways of supporting the development of expertise in higher education. The main proposition is that as

the expert knowledge is seen to comprise an integrated entity of theoretical, experiential and regulative knowledge, therefore the integration of these three should be the guiding principle of designing higher education curriculum. Integrative pedagogy can be summarized as a way of supporting the students in converting the formal theoretical knowledge into informal expert knowledge. In contrast the traditional teaching methods are argued to treat the different types of knowledge as separate and thus remain limited in supporting the development of flexible expert knowledge and critical thinking that would be of value in work contexts and practices¹.

However, realizing the integrative intentions may be inhibited due to conflicting academic culture in which the integrative pedagogy is aimed to be carried out. That is to say, treating the dimensions of expert knowledge as separate does not only pertain to the traditional *teaching methods*, but can be seen to be mirrored in the socio-cultural knowledge base that the students acquire in the course of participating in the academic culture². Therefore the students' meaning perspective and assumptions concerning the nature of theories and the relation between theory and practice can be seen to form the wider frame of reference for the student within which integrative pedagogy is being carried out. In other words, they are the prior conceptions and assumptions that organize and constrain future learning³.

¹ Tynjälä, P. 2007. Integratiivinen pedagogiikka osaamisen kehittämisessä. Teoksessa: Kotila, H., Mutanen, A. & Volanen, M.V. (toim.). Taidon tieto. Helsinki: Edita; Tynjälä, P., Välimaa, J. & Sarja, A. 2003. Pedagogical perspectives on the relationships between higher education and working life. Higher Education 46: 146–166.

² See Lave, J. 2009. The Practice of Learning. In: Illeris, K. (ed.) Contemporary Theories of Learning... Learning theorists in their own words. London: Routledge; Lave, J. & Wenger, E. 1991. Situated learning: legitimate peripheral participation. Cambridge: Cambridge University Press; Mezirow, J. (1991). Transformative Dimensions of Adult Learning. San Francisco-Oxford: Jossey-Bass; Wenger, E. 2009. A Social Theory of Learning. In: Illeris, K. (ed.) Contemporary Theories of Learning... Learning theorists in their own words. London: Routledge.

³ E.g. Limón, M. 2001. On the cognitive conflict as an instructional strategy for conceptual change: a critical appraisal. Learning and Instruction 11, 357–380; Malinen, A. 2000. Towards the essence of adult experiential learning. A reading of the theories of Knowles, Kolb, Mezirow, Revans and Schön. Jyväskylä: Sophi, University of Jyväskylä 2000; Mezirow 1991; Vosniadou, S. (1994). Capturing and modelling the process of conceptual change. Learning and Instruction, 4, 45–69.

These previous assumptions can be seen to form the experiential or implicit knowledge that may result in the integrative activities remaining disconnected with the very personal experiential knowledge that the integrative pedagogy aims to activate. Therefore in order to support the integration of theoretical, experiential and regulative knowledge the basic assumptions concerning theory and practice need to be brought to light (see Figure 1).

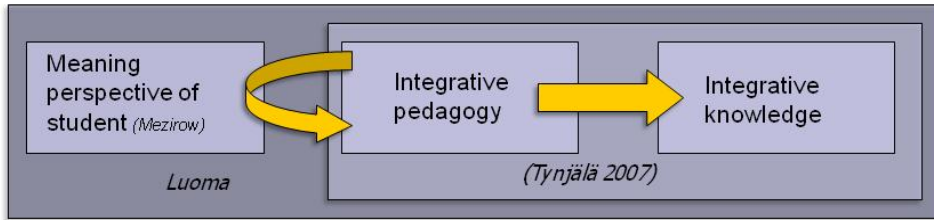


Figure 1. The prerequisites for integrative pedagogy

That is to say, previous experience and the following personal and experiential knowledge are not only a source for integrative pedagogy to draw on but comprise characteristics that substantially orient and affect students' learning and interpretations. In this case some of the relevant issues are what the students value, what they consider learning and the content to be learned, and further, how they assume responsibility and what they implicitly regard as a source of feelings of safety. The latter refers to how they position themselves in relation to the learned material - for instance, is the knowledge "up there", encompassing the truth and description of reality, and consequently the student only needs to consult "the scientific moms and dads" about the truth and account for reality. Or does the student assume himself or herself be the subject who aims to interpret reality with the help of *theoretical tools*, and consequently he or she regards himself or herself as the *user of the tool* whose interpretations both concerning the theory and the reality are significant when the theories are implemented in practical situations.

In this the metacognitive or *reflective knowledge appears as the mediating factor enabling students to adjust themselves to a different kind of learning environment*. However, it is important for the teacher not to assume it to take place on its own. On the contrary, since the integrative approach comprises a different set of assumptions regarding knowledge as well as the roles of the teacher and the

student, it requires conscious effort from the teacher *to support students in the transition from the traditional learning culture to an integrative one.*

From this perspective it is also important to consider theories and understanding the theories as such, as they are not assumed to be taken to implementation automatically and neutrally, but only through the interpreting subject that interprets both the practical environment and the theory. In order to be able use theories, one needs to understand and be able to take a stand on them, understand the limits and possibilities of the viewpoint offered by the theory. On the other hand, we may best learn to know the tool by using it. Often when we focus on implementation, we neglect understanding the theories as such; that is to say, when we shift focus, we often shift it totally away from the old and totally towards the new. Instead of this dualistic split it would be beneficial to broaden the scale; to be able to understand theories in order to implement them, and to implement theories in order to understand them. This kind of approach emphasizing a *two-way connection* between theory and practice would enable the student to maintain a thoughtful and critical touch with both theory and practice. Furthermore, as this entails focusing also on *the user of the tool*, the “theories as tools” –frame emphasizes also the need for a thoughtful and critical approach to one’s own meaning perspective, attitudes, interpretations and assumptions that filter the way one grasps both the theory and practice. The difference, for instance, to Problem Based Learning, is that while learning to implement theories, both the understanding of theories and developing reflective knowledge is explicitly supported. PBL can be seen to focus mostly on implementing as it emphasizes solving practical problems by applying theoretical knowledge⁴.

Integrative course design: “Theories as tools”

The above ideas of integrative pedagogy and the prerequisites for implementing them served as the frame within which the course was designed. Before considering the design of the course, I will briefly go over the background for the course both regarding who the students are, what kind of official frame for the course there was and what were the theoretical bases of the course design.

⁴ See e.g. Lindblom-Ylänne, S. & Iivanainen, A. 2003. Ongelmalähtöinen oppiminen – teoriasta käytäntöön. In: Lindblom-Ylänne, s. & Nevgi, A. (ed.) Yliopisto- ja korkeakouluopettajan käsikirja. Helsinki: WSOY, 356–375.

The basics of course and the students in question

The course called “The theoretical bases of learning and teaching (3 credits)” pertains to intermediate studies of Educational science by the Open University of the University of Helsinki. It comprised of 14 hours of classes divided into four weekly evenings and a case-based learning diary as a course assignment. The group of students (47 students) was very heterogeneous in terms of background and age. Most of the students were working in different fields and studied only part-time. Only few were full-time students of Education. Most were between 30-50 years of age, and a few were younger or older than this. The students’ interests for studying were various as well; among other interests, some aim to complement or further their professional expertise or their all-round-education, some study as their hobby and others to become a full-time degree-student later on.

The aims for the course, according to the curriculum, are as follows: the student becomes familiar with the most important theories and traditions of psychology, anthropology and organizational sociology. During the course the student gets acquainted with the origins, basic concepts and implementations of the traditions. As I was interpreting these official aims from the integrative viewpoint, I considered *implementation* as the core objective and the rest of the list was viewed through it. This redefinition was important in order to highlight the focus of the course: often the theoretical material is being taught with focus on the coverage and the students are left on their own in terms of learning to apply it in practice⁵. Large coverage obviously has its own advantages as it enables students to get a wider picture of the field and of the different viewpoints. However, as I aimed to support the students in opening up the connection between theory and practice, I had to reconsider the role and amount of the topics and text material to be dealt with during the course. Although it sounds easy, it nevertheless required quite a lot of effort as I realized *my previous experiences as student* were haunting me to assume that a proper course means large coverage.

Therefore I specified the objectives in an integrative manner as follows: to facilitate the development of educational scientific expertise by supporting integration between theory and practice; *to learn to implement theories in order to understand practical situations*, and on the other hand, *to learn to conceptualize experiential knowledge and implicit understanding of the practical situations in order*

⁵ See Biggs, J. 2003. Teaching for quality learning at university. What the student does. 2nd edition. Buckingham: Society for Research into Higher Education : Open University Press; Tynjälä 2007.

to enter into dialogue with theories. An important dimension of this is *to support the development of one's subjectivity and agency in relation to theories.* The idea of "theories as tools" was considered as a frame orienting the ways the theories, experiences and the relation between the two were considered and dealt with during the course. This way the main idea was also explicitly addressed in the nickname of the course, thus orienting students to question their assumptions about the use of theories and their role in using them. Altogether the objectives were explicated that encouraged students to challenge theories based on their experiential knowledge and on the other hand, challenge their experiential knowledge based on theoretical knowledge.

Most of the students were older and had much more work and life experience than I, at the time 27 years old PhD student. Therefore I assumed that considering my background, I would not be able, for instance, to lecture in a way that would have been meaningful and motivating for the students. Instead I aimed to channel the students' previous experience as the building blocks of the course activities. This served two purposes: first, to enable meaningful learning for the students and second, for me to get to know their thoughts and viewpoints in order to bring in theoretical material in a meaningful way. The fact that the phenomena of learning and teaching are constantly present in everyday reality offers a sensible starting point for this. On the other hand, referring to the viewpoint of conceptual change research⁶ activating students' previous *practical* understanding of learning and teaching can be seen as a necessary element in order to teach theories constructively. That is to say, even though the students may not have previous knowledge or experience of the theories as such, they nevertheless have previous experience and understanding of learning and teaching *in practice*, i.e. of the *phenomena that the theories are about*.

In addition, six students were interviewed on a voluntary basis first in the beginning of the course and then in the end right before finishing and handing in the course assignment (case-based learning diary). This offered me a chance to understand better the various backgrounds and interests of the students as well as their previous study experiences while collecting material for further research. Another important viewpoint in the interviews was to understand the student experiences regarding the on-going course; how they viewed its relevance as well as suitability for their preferences in terms of ways of working. Thus I was able to receive in-depth feedback from the students already during the course, which I used to steer the rest of the course if possible. The second interview was carried out at the time when the students were finishing the case-based learning diary

⁶ Limón 2001; Vosniadou 1994

and the learning diary was used as the basis for the interview. The students got personal feedback and guidance, and I was able to track the students' learning process and ways of approaching the assignment. Also general experiences and themes regarding the course and their learning were discussed. These interviews contributed remarkably to my understanding of the student viewpoint. This enabled me to adapt my teaching and apply some new ideas in a more relaxed and uninhibited manner as I had heard the personal accounts of the students that deepened the impressions that I had gained by sensing the group atmosphere.

The theoretical bases for the design

The above view of integrative pedagogy as the background the course was designed drawing, firstly, on Biggs⁷ concept of constructive alignment in terms of the structure of the course, and secondly, on Mezirow's⁸ transformative learning theory and Malinen's⁹ adult experiential learning theory in terms of understanding of the nature of adult learning. The concept of constructive alignment¹⁰ stresses that in order to support students in achieving intended learning outcomes, all the elements of learning environment, including both assessment methods and teaching and learning activities, need to be in line with the curriculum objectives or intended learning outcomes. Both Mezirow's¹¹ and Malinen's¹² work on adult experiential learning highlight adult's life history, experiences and the following personal experiential knowledge as the orienting framework for learning and explore analysing experience as a means of enhancing understanding. Mezirow also highlights the social construction of the personal belief system and considers the role of reflection and social environment in adult learning¹³. These theories have influenced my thinking most of all through my re-

⁷ Biggs 2003

⁸ Mezirow 1991; 2000.

⁹ Malinen 2000; 2002.

¹⁰ Biggs 2003, see also Lindblom-Yläänne, S. & Nevgi, A. 2003. Oppimisen arviointi – Laadukkaan opetuksen perusta. In: Lindblom-Yläänne, s. & Nevgi, A. (ed.) Yliopisto- ja korkeakouluopettajan käsikirja. Helsinki: WSOY, 253–267.

¹¹ Mezirow 1991; 2000.

¹² Malinen 2000; 2002.

¹³ See also Luoma, K. 2009. Theorizing the Challenges of Reflection. Two-Layer Tension Formulation Disclosing the Emotional and Social Dimensions. (submitted)

search, in which I focus on adult learning theories by elaborating on Mezirow's theory of reflection supported and challenged by empirical data.

The design of the course

The different aspects of the course were designed according to the objectives, thus exemplifying the idea of constructive alignment¹⁴. The essence of the course was the case-based learning diary, and the rest of the elements were aimed to support this writing process focusing on bridging theory and practice (see Figure 2): The classes comprised of group discussions, theoretical wrap-ups, theoretical intros and meta-intros that aimed to offer different kinds and levels of channels for communication. The assessment criteria explicated the objectives and thus also helped to orient to the process as it was handed out to the students in the beginning of the course. In the following I will briefly discuss each of these separately.

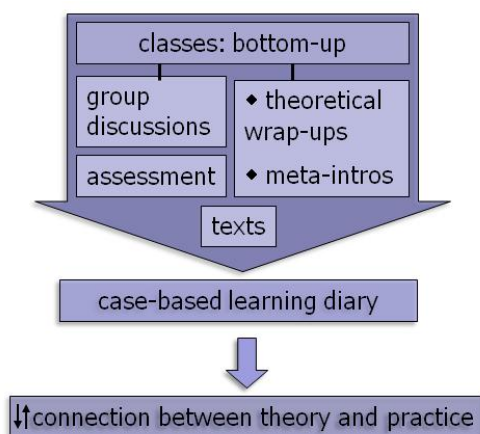


Figure 2. The design of the course.

¹⁴ Biggs 2003.

Case-based learning diary

The main learning assignment was a case-based learning diary, in which students got to analyse a case of their own choice according to the themes, concepts and theories of each course meeting (see Figure 3). The case was analysed three times during the course. At the end of the course students wrote a synthesis elaborating on their earlier case analyses. The case could be any real-life situation pertaining to work, studies, relationships, parenting or hobbies. The only requirements were that the case involves learning and interaction and it is based on the student's own actual experience. The length of each case analysis was 2-3 pages and of the synthesis 3-5 pages.

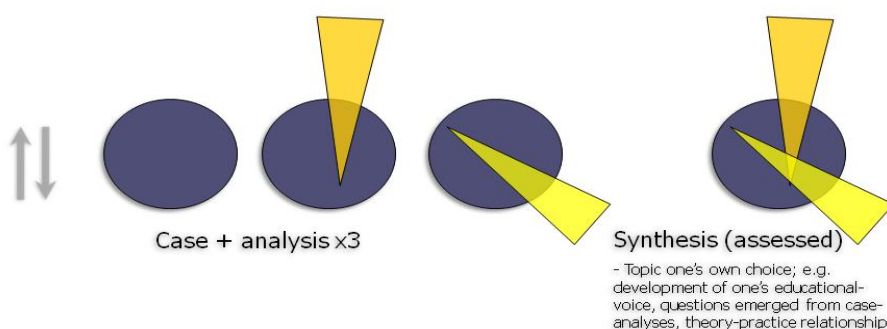


Figure 3. The Case-Based Learning Diary

There were four course meetings during which the issues of learning and teaching were considered from different viewpoints and additional material was addressed to each theme. The idea was to analyse the case from different theoretical viewpoints and thus acquire first-hand experience in implementing theories into analysing practical situations. This also aimed at deepening understanding of the theories and offering understanding of both the scopes and limitations of different theories *and the relations between the theories* as they were perceived in relation to the practical case. This helped students to conceive the theories as *different perspectives into the same practical situation* instead of referring to different realities. The students were encouraged to explicate their experiential knowledge and understanding of the case and use that as a reference for assessing theories. As this was the first time for the students to write such

case-analyses, I considered it necessary to offer them space to practice it without the expectation of being graded. On the other hand, as these case-analyses were supposed to be free form and informal to enable insights and free exploration with themes, theories and analyses, I considered it might be beneficial to leave them ungraded.

In addition to the case-analyses, the learning diary comprised a *synthesis*, which was the only object of assessment. The aim of the synthesis was to elaborate on the case-analyses on a more comprehensive level and to integrate the subjective experiences, reflective insights, and theoretical analyses. The synthesis was written from a freely chosen viewpoint and topic. This required students to sum up and assess their own previous analyses in order to formulate a topic for their synthesis that would best enable them to represent the conversation between theory and practice.

Some students chose to write on their development of expertise or “working philosophy” by applying the theories to their own life experiences and challenging the theories based on their own understanding. Some students analyzed their group discussions and how they developed during the course and what kind of conflicts emerged. Others examined theories and their role in practical situations in general whereas some analysed a case from their work with the help of theories and then turned the gaze back to the theory to assess its propositions in relation to other theories, practical examples and their personal understanding. Thus the students were able, as with the case analyses, to write from the viewpoint that is the most relevant for them. From the assessment point of view the most important thing was how they use theories to understand and analyse practical situations, and how they understand, assess and challenge theories based their own understanding.

Learning and teaching methods

The classes were designed to support the writing of the case-based learning diary and integration of theory and practice. The idea was to work “bottom-up” by utilizing, acknowledging and conceptualizing students’ previous understanding and experiences as the starting point to enter into dialogue with theories. The students were aware of the role of the classes as supporting their writing instead of the classes being compulsory as such.

The classes were based on group-discussions on specific topics. The topics of the group discussions were carefully chosen and aimed to stimulate practice- and experience-based pondering on a specific issue. These discussions served

as a "zone of proximal development"¹⁵ to support both explicating experiential knowledge, making theoretical concepts practical, and being able to locate one's own viewpoints and finding one's own voice while discussing with other students¹⁶. The results of the group discussions were shared and further analysed with the whole class. The level of abstraction was then raised and the discussion was connected more directly to concepts and wrapped in relation to theories.

In addition to the group discussions there were teacher-led presentations as well as discussions that drew on students' examples and experiences in order to deal with theories and concepts. Regarding the previously examined prerequisites of integrative pedagogy, there were also special kind of theoretical intros, i.e. *meta-intros* that aimed to frame the field of theories by offering metaphors and other support for *understanding the nature of theories*. This was based on my assumption that in order to support students in learning to use theories as tools, they need support both in anchoring theories into practice and in anchoring them to the nature of theories in general. Students' previous understanding also comprises implicit assumptions about the nature of theories and knowledge. Thus these need to be taken into account when bringing in new ways to think about and use theories. In sketching the meta-intros I drew on my own understanding of both the nature of theories and the development a theory that has developed while doing both theoretical and empirical research. In this I also utilized literature on the history and evolution of learning theories and the debates between different lines of research¹⁷.

My aim was to time the different kind of activities and intros in a balanced way, so that students would not become bored of group-work or lecturing without variety. However, in the beginning there were more group-discussions, so that students would get to "open their voice" and thus get engaged with the topics and see the value of their own understanding. After this the atmosphere remained conversational and students got interested in both hearing the teacher point of view to support, deepen and challenge their thoughts and bringing structure in their understanding with theories.

Also the order of topics was planned considering the different processes during the course. The first themes were the kind that the students were most familiar

¹⁵ Vygotsky, L.S. (1978). *Mind in Society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

¹⁶ See Lave & Wenger 1991; Mezirow 1991.

¹⁷ E.g. Miettinen, R. 1984. *Kognitiivisen oppimisnäkömyksen tausta*. Helsinki: Valtion koulutuskeskus.

with. This offered a good starting point for the group to get to know each other while working with familiar topics. After that a more unknown theories were taken up and group assignments got more challenging. The themes in the end utilized the familiarity within the group by introducing more intimate topics related to reflection. The last theories also offered concepts to the reflective component in integrative knowledge and thus helped students to deepen and assess their own understanding regarding other themes.

Assessment criteria

Biggs¹⁸ has pointed out how assessment creates a backwash, a hidden curriculum, which orients student learning despite the official objectives. Thus in order to channel the backwash towards the objectives of the course, the assessment criteria of the course was designed according to the objectives of integrative pedagogy. The assessment was based on verbal accounts of levels of understanding according to Bloom's taxonomy. However, Bloom's basic taxonomy can be seen to consider only the understanding of theoretical knowledge. Therefore I generated an extension of the taxonomy with two more columns; first concerning reflective knowledge and conceptualizing experiential knowledge, and second concerning dialogue between theory and practice (or experience) (see Figure 4). In this way the assessment was aligned with the intended learning outcomes and the assessment criteria offered the students explicated understanding of the objectives of the course. The assessment criteria were handed out to the students at the beginning of the course.

¹⁸ Biggs 2003.

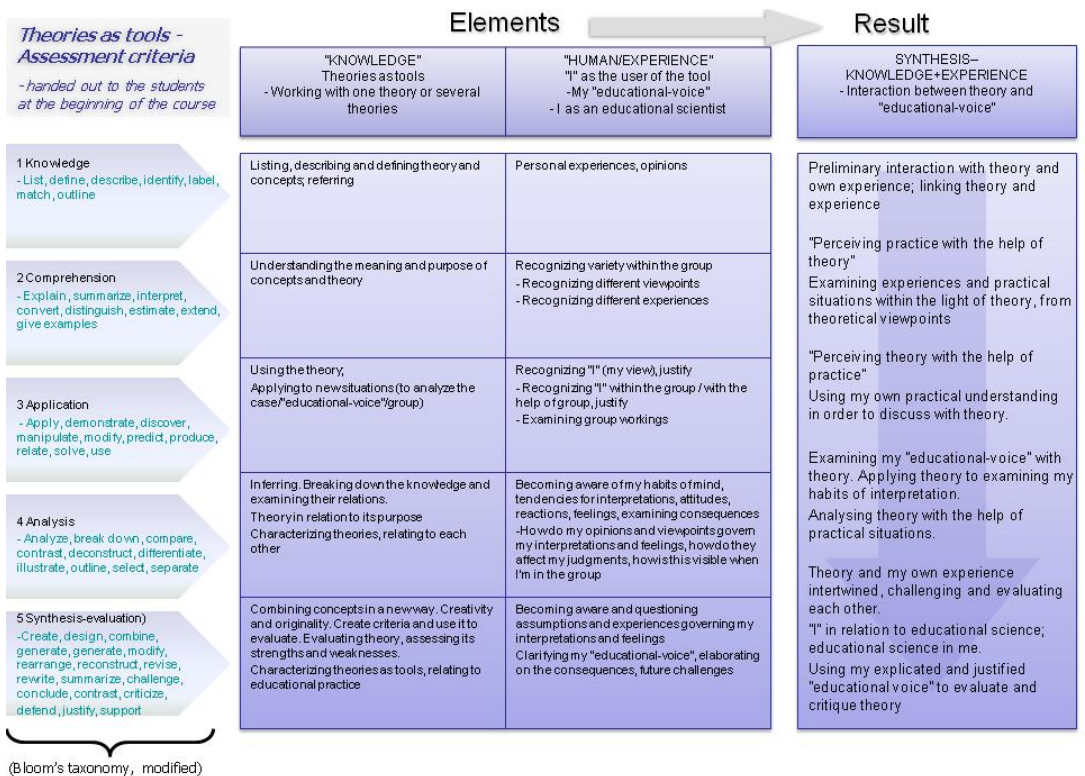


Figure 4. Theories as tools -assessment criteria.

The column on the right-hand side represents the levels of understanding that are the main focus in the assessment. In the lower grades theoretical, practical and reflective viewpoints are represented in a fairly detached manner. Towards higher grades these become more intertwined and the student is able to under-

stand and analyse practical situations with the help of theory as well as explicate his or her practical understanding in order to enter into dialogue with theories. At the higher grades theories are implemented in order to challenge one's own interpretations, assumptions and habitual ways of interpreting situations. Also at the higher grades the theories are being critically analyzed and challenged by one's own understanding and other theories.

Assessment and Personal Feedback

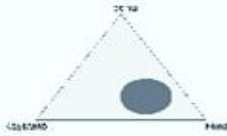
As the main goal of the course was to support students in opening up the connection between theory and practice, I considered it necessary to offer verbal qualitative feedback that would help students to get a better grip of the processes of theory-practice interaction that they had already taken up and to support the progress onwards. Based on the assessment of the case-based learning diary I provided the students with one page of personal feedback (see Figure 5) and a two-page letter as a general feedback for the course and my personal reflections on it.

Henkilökohtainen palaute A 1.3 Oppimisen ja opetuksen teoreettiset perusteet –opintojaksosta

Nimi: XX (arvosana 4)

Olet laatinut Oppimisen ja opetuksen teoreettiset perusteet -kurssin oppimistehtävänä case-pohjaisen oppimispäiväkirjan sekä sitä jalostavan "teoriat välineinä" -arvosana muodostuu synteisin arvioinnista, jolle esitän tässä paperissa perusteluni.

A



Oheinen yksinkertaistettu ja pelkistetty kuva toimii apuna työsi arvioinnin. Sen tarkoituksena on kuvata sitä, miten työsi painottuu "teoriat välineinä" ja "minä välineen käyttäjänä" -painopisteiden suhteen:

Synteessissäsi painottuu kasvis-äänien tarkastelu käytännön tilanteen analysoinnin kautta. Painotuksen vahvuutena on omakohtainen reflektiivinen ote, jossa käytännön tilanteet toimivat lähtökohdina oman asiantuntijuuden/opettajuuden kehittymisen pohtimiseen. Haasteena on pystyä hyödyntämään tarkastelussa teorioita monipuolisesti, kytkä omia pohdintoja käsitteisiin sekä kääntää katse myös "takaisin teoriaan", eli hyödyntää reflektiivisen tarkastelun tuottamia havaintojasi ja oivalluksia teorioiden analysointiin ja arvioimiseen.

ARVIOINTI: Edellä kuvattuun painotukseen nojaten olen päättänyt arvioimaan työsi kehityksessä olevien arvosanojen mukaisesti: Kokonaisarvosana 4, koostuen elementtien osa-arvosanoista "teoriat välineinä":4 ja "minä välineen käyttäjänä":5. Toivottavasti näet tämän arvioinnin vastaavan omaa työpanostasi. Seuraavassa perusteluni:

	Elementit	Loppupäätös
1. Teoria	Teorian välineinä Teorian välineinä Teorian välineinä	Teorian välineinä Teorian välineinä Teorian välineinä
2. Käytäntö	Käytännön välineinä Käytännön välineinä Käytännön välineinä	Käytännön välineinä Käytännön välineinä Käytännön välineinä
3. Minä	Minän välineinä Minän välineinä Minän välineinä	Minän välineinä Minän välineinä Minän välineinä
4. Teoria	Teorian välineinä Teorian välineinä Teorian välineinä	Teorian välineinä Teorian välineinä Teorian välineinä
5. Käytäntö	Käytännön välineinä Käytännön välineinä Käytännön välineinä	Käytännön välineinä Käytännön välineinä Käytännön välineinä
6. Minä	Minän välineinä Minän välineinä Minän välineinä	Minän välineinä Minän välineinä Minän välineinä

B

Työsi ilmentää vahvaa reflektiivistä otetta ja käytännön tilanteiden luontevaa valjastamista oman oppimisen lähtökohdaksi. Omakohtainen ote ja kokemuksen kautta reflektion prosessin luonteen ja merkityksen pohdinta sekä oman tarkasteltavan teoretointi ilmentävät vahvaa kasvis-äänien "kuulostelamista", teorian poikkeuksellisen syvällistä ymmärtämistä sekä loistavaa teorian ja käytännön vuoropuhelun hyödyntämistä! Ylempi arvosana olisi edellyttänyt 2-suuntaista tarkastelua, eli reflektion hyödyntämisen ja analysoinnin lisäksi teorian haastamista, kritiikkiä ja arviointia: oivaltava reflekto-pohdintasi olisi varmasti tarjonnut tähän aineksia!

Ylempi arvosana olisi edellyttänyt 2-suuntaista tarkastelua, eli reflektion hyödyntämisen ja analysoinnin lisäksi teorian haastamista, kritiikkiä ja arviointia: oivaltava reflekto-pohdintasi olisi varmasti tarjonnut tähän aineksia!

Oivaltamisen iloa ja rohkeutta sukeltaa!

Terveisin

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Figure 5. Assessment and Personal Feedback Form

The feedback form consisted of three sections that in the above figure are called section A, B and C (see Figure 5). On the first section I located the viewpoint of the synthesis in terms of a triangle in which the angles represent "theory", "practice" and "I". The students could approach the theory-practice connection from a variety of viewpoints, and thus it was important to offer the students my interpretation of the emphasis of their writing in relation to other possible viewpoints. I pointed out the strengths and challenges of the chosen viewpoint in general, thus informing both of the issues that they have examined in detail and of the issues that they may have neglected. Nevertheless this conceptualization was neutral in terms of assessment as it only provided the basis by explicating the point of view of the synthesis. Thus it served as a bridge to the criteria.

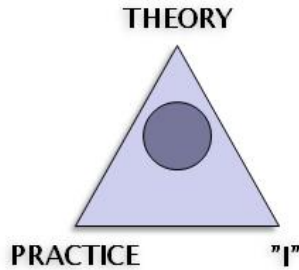


Figure 6. Triangle for locating the viewpoint of the synthesis

The second section offered the actual assessment by locating the synthesis according to the assessment criteria. The synthesis was graded based on the three columns, of which two served as the elements and the interaction-column as the final grade. With the help of the elements it was possible to explain and justify the grade. As the synthesis could be written from a variety of viewpoints, the elements enabled to consider the strengths which could be either on “theories as tools” -domain or “I as the user” –domain, or both. In addition to the justifications to the grade that was offered, also the *requirements for a better grade were explicated as a guide for future learning*.

The third section included an additional comment that pointed out an especially insightful aspect of one’s work, in any section of the case-based learning diary. Thus it offered an opportunity to give credit of quality also in non-graded case-analyses.

Student experiences

Based on the learning diaries and student feedback the course supported the integration of theory and practice as well as analysing of theories and explicating experiential knowledge with the help of theoretical lenses. The students found the course and the writing of the learning diary challenging while at the same time encouraging and empowering learning experience. One student expressed this as follows:

Before I thought my daily practice and little students are miles apart from the great theories whereas now they have started to communicate.”

According to the students the thematic group discussions, class atmosphere, feeling of being trusted, personally relevant case-based learning diary and the role of teacher turned out to be significant elements in implementing the integrative pedagogy.

The 6 students that were interviewed and got the chance to get feedback during the course, expressed that they felt they were privileged while receiving personal guidance and feedback that the rest of the group did not. Especially in the second interview that took place when the student's case-based learning diary was nearly finished I realized how consequential was just a short discussion on the student's on-going writing. It helped the student to see and understand the way he or she at that point understands the connection between theory and practice and deals with it based on the writing process, and what kind of viewpoints or questions would help him or her to take the issue further. However, this only worked out well since we had the concrete assignment version at hand – at that point also the things that I had mentioned earlier in the class started to make sense. This made me think about the possibilities for integrating an element of guidance to the course next time. However, the course schedule and credits set their frame, and thus I have planned on asking students to hand in their assignment versions after third class meeting, and then in the last class meeting we could talk about the issues that came up in their writing with concrete examples.

Closing remarks

This paper has offered one practical example of implementing integrative pedagogy. “Theories as tools” –course emphasized a two-way connection between theory and practice: the theories were not only implemented in order to understand and analyze practical situations, but the focus was also on understanding

and analyzing theories. The basic assumption was that one can get to know the tool best by using it. From this starting point the theoretical knowledge can be approached with a touch of personal relevance. Thus it is assumed that if the course supports student in opening up the connection between theory and practice, then the student is more able to study theoretical knowledge on his or her own.

The student feedback brought up several different dimensions of the course as facilitating their learning process. This mirrors the idea of constructive alignment¹⁹ which emphasizes that the different elements of teaching and learning environment contribute to the student experience and orient learning. This also highlights the significance of the larger frame of implementing integrative pedagogy discussed at the first section of this paper: the teacher needs to take into account the students' previous experiences and assumptions regarding learning, their role and capabilities as learners and the nature of theories, and offer support and space for becoming aware of them and dealing with the transition from traditional pedagogical settings to an integrative one.

Another important perspective into supporting integrative pedagogy and especially the transition towards it, is *the role of the teacher and the assumptions and expectations that he or she exhibits while interacting with the students*. It is essential that *the teacher embodies in his or her behaviour and reactions the same assumptions that he or she explicitly assumes of the students*. This calls the teacher to deepen the idea of constructive alignment into reflective alignment²⁰, by realizing that his or her personal ways of interacting with the students brings out his or her assumptions that either support or hinder learning, whether the teacher is aware of them or not. The teacher's way of being present, talking and reacting forms a filter through which the rest of the course is experienced by the student. Thus the reflective knowledge of teacher regarding his or her own assumptions and actions is important in order to get hold of these and steer his or

¹⁹ Biggs 2003

²⁰ Luoma, K. 2007. Reflective alignment – the teacher in aligned teaching. Paper presented at FERA Kasvatustieteen päivät, Vaasa.

<http://arkisto.kasvatus.net/kasvatustieteenpaivat2007/Luoma.pdf>; Luoma, K. 2008. Uutta pontta opetuksen kehittämiseen: reflektoitu linjakkuus avaimena opetuksen kehittämiseen. In: Mäkinen, J. (ed.) Opettajuus Maanpuolustuskorkeakoulussa ennen, nyt ja tulevaisuudessa? Koulutustaidon laitos, Julkaisusarja 2, N:o 22. Helsinki: Edita Prima.

her actions and reactions in the class to be more aligned with the explicit learning objectives of the course.

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2 Five Dimensional Pedagogy

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Abstract

Educators not only face the rigorous demands of advancing research and publication but also a new cohort of students known as the Millennials who also mandate an investigative approach to teaching course materials. Where conventional pedagogical paradigms focus on the dispensing and retention of information, the evolution of education has increasingly been met with approaching course material from various perspectives. This paper showcases five perspectives, as developed within the context of a university-level architecture and design curriculum, which educators may adopt into their own courses. Dubbed the 5 P's of perspective teaching, these guidelines for educators foster students' understanding of material within the parameters and mindsets of a) their Projects, b) their Professors, c) their Peers, d) the Professional Industry, and e) ultimately at a Personal level. Each guideline is examined through examples with suggestions on application to other courses especially at the introductory level for post-secondary students.

FIVE Dimensional Pedagogy

Educators often believe that students entering their post-secondary studies focus on what they wish to become as opposed to what they should learn. Unfortunately such a narrow view of education is neither productive in nurturing student interest nor effective in communicating teaching objectives.

Each generation of students has presented a unique background that played a significant role in molding the various pedagogical models educators espouse today, ranging from the GI Generation through to the Baby Boomers to Generation X. With the rapid technological innovations of the past two decades, an-

other generation, dubbed the Millennials, has emerged with such a unique array of characteristics that it behooves educators, specifically those in postsecondary institutions, to develop equally unique approaches to facilitate this wave of students. Conventional paradigms of education must be readdressed to appropriately catalyze learning with this cohort. Based on precedents explored through several years of teaching within multiple postsecondary design and architecture programs in North America, this paper posits five different dimensions of contemporary pedagogy to address this group of students. This model requires students (and in some instances, their instructors) to understand course material through the lenses of their a) professors, b) projects, c) professional industry, d) peers, and e) their personal level.

Students wish to learn. Their motivation is based on the benefits a course has to offer. At high school and post-secondary levels, this desire to learn must be nurtured. Within the context of contemporary post-secondary levels, it must be demonstrated and proven. It behooves educators to articulate these benefits and make the material relevant. By changing outlooks, students and educators become engaged in the material explored in coursework. Beyond meeting pedagogical objectives, the ability to connect course material through the Five P's to future academic, professional, and personal development enhances the learning experience for all parties.

The Millennial Generation

Though many educators focus on improving their teaching by maintaining their currency through innovative research or relationships with professional industry, often they omit a critical player in the educational dialogue – the student. Just as academics must be vigilant in remaining at the forefront of the ever-changing nature of science and the arts, contemporary instructors must maintain an acute appreciation of the traits and issues related to their target student audience.

Referred to as Generation Y, Generation Next, the Digital Generation, this is a group of people who were born between 1980 and 2000 and were likely brought up in environments saturated with a technology, media, and information; as such, many educators and ethnographers have noted that this generation is characterized as “*sociable, optimistic, talented, well-educated, collaborative, open-minded, influential, and achievement-oriented*”.²¹ At over 80 million, they

²¹ Raines, Claire. *Connecting Generations: The Sourcebook*. New York: AMA-COM Publications 2002
Generations at Work: The Online Home of Claire Raines Associates

are a significant demographic to specifically address in post-secondary education as they are inclined to be driven to perform well with a great sense of self-assuredness yet fall prey to failing to connect with academic material and comprehend concepts at both the macro and microcosmic level.²²

Don Tapscott elaborates in his book, *"Grown Up Digital"*, the eight Net Generation Norms which include strong desires for freedom in everything to do, for customization, for transparency, for social integrity, for a degree of recreation in their professional and personal lives, for collaboration and relationship generation, for speed, and ultimately for innovation.²³ In outlining these norms, it is clear how a five dimensional pedagogical paradigm can embrace these demands from a new generation of student.

The Millennial Generation may appear to be a paradox on many levels. Individually ambitious yet socially conscious and highly connected yet vigilant about individuality, this generation proves to be a refreshing part of today's classrooms. The close networks established by these students have instilled a deep drive toward collaboration that has fueled a sensitivity to self-esteem and the individual's role in improving a shared future.²⁴ Despite these advantages the Millennial Generation has been mobilized with, researchers have been quick to also point out significant challenges they face including their demanding confidence and notably their insular development towards what Dr. Steven Berglas refers to as *"so coddled, so inoculated against insults and injury, that they are now too... soft to achieve success"*.²⁵ Given these types of contradictions, educators must constantly pursue ways to engage this group with as much determination as their own research interests, if not more.

<http://www.generationsatwork.com/articles/millennials.htm> (1.15.2009)

²² Howe, Neil and Strauss, William. *Millennials Rising: The Next Great Generation*. 1.12.2006

<http://www.studentprograms.vt.edu/publications/millennials.php> (11.20.2008)

²³ Tapscott, Don. 2009. *A Generation Bathed in Bits. Grown Up Digital*. New York: McGraw Hill. pp34-36

²⁴ Millennial Generation and Entrepreneurship. 12.13.2008. MillennialGeneration.org.

<http://www.millennialgeneration.org/2008/12/millennial-generation-and.html>

²⁵ Berglas, Steven. *Entrepreneurship (Or Lack Thereof) in Millennials*. 12.10.2008. Forbes.com

http://www.forbes.com/2008/12/10/melliennial-barack-obama-ent-manage-cx_sb_1209berglasmillennial.html (12.19.2008)

Traditional Methods

Traditional pedagogical models focused on meeting objectives and potentially application to specific conditions or practice. Truly transformative teaching engages students to go beyond those two goals and aspire to encourage students to think about the material in different ways and ultimately contribute to a long-term learning process (Figure 1).

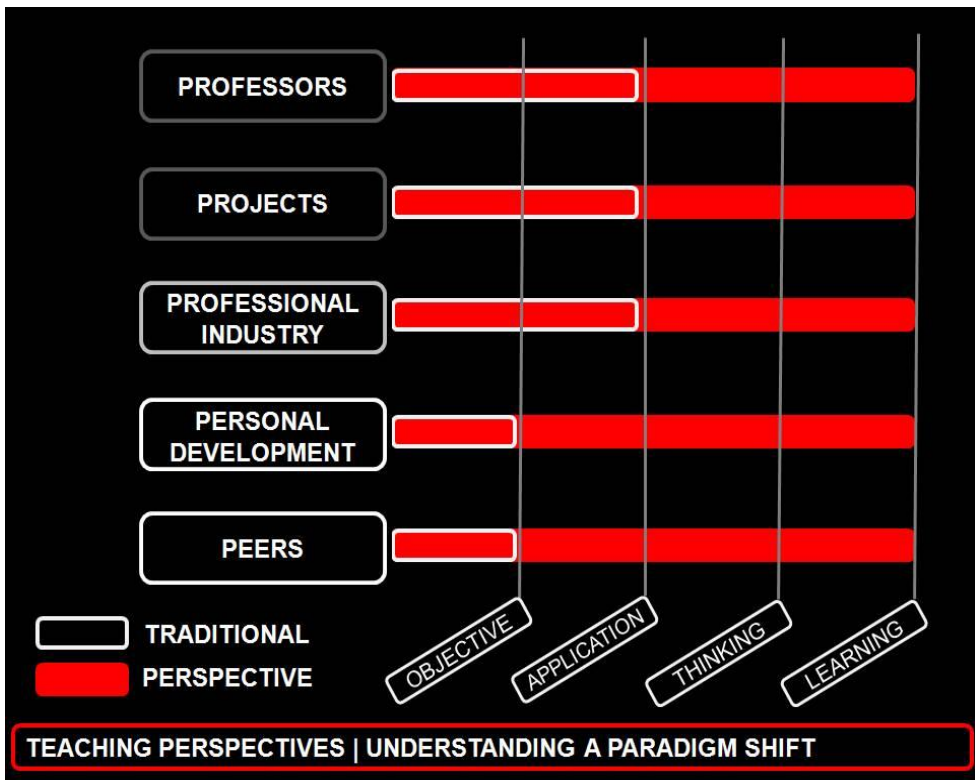


Figure 1. Traditional Teaching Methods Relative to a Five Dimensional Approach

Perspective ONE: Professors

Provide clarity, accountability, and transparency in pedagogical goals

Despite research indicating that 77% of Millennials have illegally downloaded in-

tellectual property, concurrent research has also revealed that a majority of these people hold “integrity, honest, consideration, accountability, and transparency” as important tenets of social value.²⁶ Though this paradox stems from the generation’s attitudes towards collaboration and ownership, it should not diminish the mandate prescribed by these students for clarity and accountability from their educational institutions

Be explicit and establish objectives

In our increasingly measured world, this generation has been noted as adopting this metric-driven context to the point where they have “*lost the sense of pure play. They expect everything to be planned for them and do not expect to have as much freedom – or responsibility for structuring their educational lives.*”²⁷ This grounding in structured activities has led to a significant demand for explicit marking rubrics and evaluation metrics.

A key place in the curriculum to provide these metrics would be in course outlines and marking rubrics. In the architecture courses described in this paper, course outlines were presented to students explicitly detailing course objectives, learning modes, assignment and test weightings, penalties, and academic integrity notices (as mandated by the university). The relatively low tolerance for ambiguity may be mollified by clear objectives and standards for performance. Similarly, it is important for professors to establish strong minimum goals to ensure pedagogical objectives are met without compromising the independence or creativity a student may have.

Millennials are mature enough to make decisions on their own; offer students choice. Beyond professors extending mutual respect to students to take charge of their education, providing options for students to learn is invaluable. Within the context of a digital visual communication course, this choice manifested itself in a series of tutorials. As students tend to learn computer applications at different rates, the tutorials were developed to facilitate maximum learning while serving as a source of academic marks. The tutorials were held every week during

²⁶ Tapscott, Don. 2009. A Generation Bathed in Bits. Grown Up Digital. New York: McGraw Hill. P266

²⁷ Coates, Julie. 2007. Generational Learning Styles. Generation Y – The Millennial Generation. River Falls: LERN Books
<http://honolulu.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachtip/GenY.htm> (12.28.2008)

the term (lasting 13 weeks), with each session mandating the submission of an in-class assignment. Students were given a choice to selectively attend the tutorials and submit assignments for marks, or attend the session and work with teaching assistants to reexamine concepts from class, or (for those who were not interested or had too much catching up to do) not attend at all. Regardless of the situation, the top five tutorial submission marks were taken into account in a student's average. This proved to be an enormous success over past years the course was taught as it allowed students to actively decide what they would try to accomplish during a tutorial while facilitating a productive educational model.

Consider methods encouraging active classrooms

Tapscott posits that the integration of play and interaction in the classroom has empowered children between 2-17 to engage "outside of the box thinking".²⁸ Professors are facilitators of integration and application of knowledge. In class clickers, online surveys, demonstrations, and classroom games are but a few methods to activate the classroom.

Many progressive educators go beyond the textbook and bring students to laboratories, field trips to sites, or even invite guest speakers. In fact, it behooves instructors to facilitate this integration between what is taught in the classroom and what potential career paths are available to students. Seventy percent of Millennial students both expect to work in professional jobs based on their academic background and also believe post secondary education is necessary to meet their career goals.²⁹ Educators must also embrace an integration of material to other courses and disciplines in what Nicola Yelland outlines as the three conditions that have fundamentally changed our world - technology, commerce, and culture.³⁰

Within the context of a foundational building construction course, it was determined that students had to go beyond the traditional methods of learning construction drafting and go beyond the two-dimensional representations of assembly. Contacting local trade organizations, a field trip was arranged to bring the students to a masonry training centre to work with apprentices and not only observe how real buildings are assembled, but to also actively construct an exterior

²⁸ Tapscott, Don. 2009. *A Generation Bathed in Bits. Grown Up Digital*. New York: McGraw Hill. p34

²⁹ Tulgan, Bruce and Martin, Carolyn. 2001. *The Most Education-Minded Generation in History. Managing Generation Y*. New York: Human Resource Development Press. p7-9

³⁰ Yelland, Nicola. 2006. *Shift to the Future*. New York: CRC Press . p24

building envelope (Figure 2). This activation of the classroom demonstrated the awareness of students' weaknesses in making the connections between what was drawn and what was actually constructed.



Figure 2. First year architecture students going beyond the textbook and actively participating in learning.

Discover what should be covered relative to what is uncovered

Feedback loops are absolutely vital to educational practice. Often professors fail to realize that it is not a one-sided relationship where students simply receive feedback from an authority in the form of marks; the other half of the relationship

is for professors to gain insights on their performance by the students. At the same time it is important that professors remain acutely focused on what kinds of feedback is appropriate and actionable. Rose Kundanis describes the conventional model of the feedback loop as a relay between a source and a receiver with messages and feedback flowing between the two nodes however she presents a contemporary model riddled with distractions (what she refers to as “noise”) which can significantly alter the impact and meaning of what is communicated.³¹ It is imperative that professors maintain clear and open channels of communication such that the pedagogical activity is mutually beneficial (Figure 3).

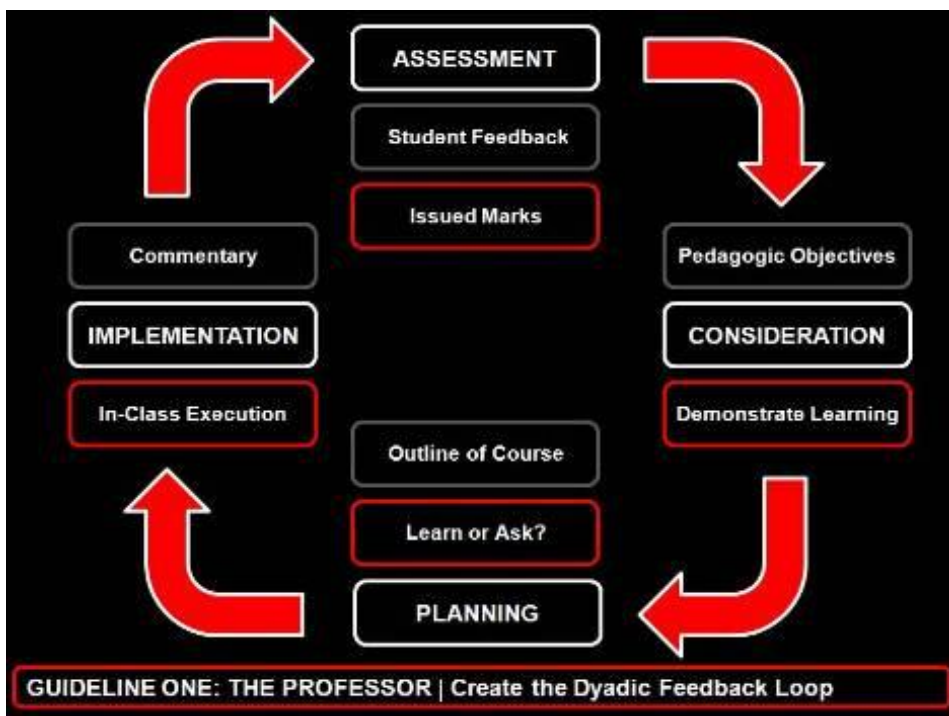


Figure 3. The Pedagogical Feedback Loop: The value of feedback is vital to both student and instructor

³¹ Kundanis, Rose M. 2003. Children, Teens, Families, and Mass Media: The Millennial Generation. New York: Lawrence Erlbaum Associates. pp.6-8

Technology has extended the classroom into the homes of students with tools such as online chat rooms, discussion boards, and online surveys which empower a professor with the potential for receiving feedback. In several classes, it was determined that the material taught was very dense and often individual students experiencing difficulty with the material would be reluctant to voice their concern in class and ultimately fall back in the learning environment. In order to address this, students were given scraps of paper at the beginning of each class and encouraged to answer two questions and bring the responses to the front of the class during the break while the professor stepped away from the room (Figure 4).³² Near the end of the mid-class break the professor would return to the classroom and pore through the anonymous feedback. This allowed students to not only articulate the areas where they were experiencing problems which would be addressed by the professor after the break, but also allowed the professor to immediately address any questions immediately while improving his teaching style.

³² The two questions were: 1) "What do you like about the course so far?" and 2) "What should be improved upon or re-addressed?"

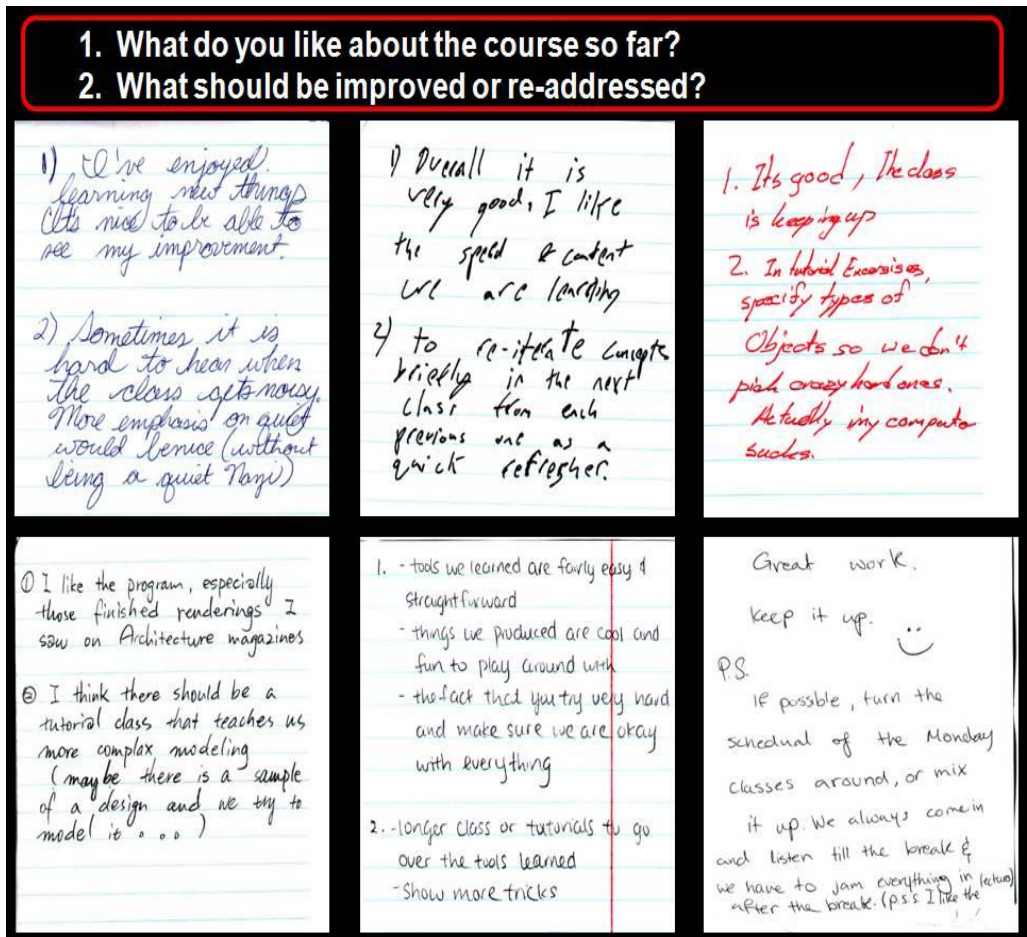


Figure 4. Feedback from students during a class

Perspective TWO: Project

Create engaging exercises for students to demonstrate the desired learning

Contemporary students are bombarded with assignments and projects that vary in serving as a motivating force to simply a pursuit of academic inquiry. It is essential that instructors understand that this generation of students genuinely seeks to learn, "but they want to learn only what they have to learn, and they want to learn it in a style that is best for them...often they prefer to learn by do-

ing.”³³ Projects play a critical role in understanding the pedagogical value of a course.

What gets rewarded gets done

This old adage is even more important to adhere to given the current objective-focused generation of students entering post secondary institutions. As business strategist Willie Pietersen outlines, when one establishes metrics and reward systems, instructors are send two clear messages: that they are gauging progress as well as highlighting the relative importance of specific issues.³⁴ Similar to the level of explicitness required in a course outline, project briefs should also clearly articulate to students what is required and what the minimum standards would be. Though rubrics and examples are extremely useful in these instances, it is important for professors to truly understand the work, consideration, and effort required by each student on each project.

As an example of this, within an urban planning design course, a planned project was anticipated to be too simple to assign students yet the objectives and parameters of the project were conducive to the mandate of the course. As a result, before the term began, the professor actually did the assignment as he had originally outlined. In the process of completing the assignment, the instructor massaged the requirements based on how long certain tasks took and the value and relevance to a student’s learning. The end result was the delivery of a project which remained true to the instructor’s high expectations while staying within the feasibility of busy student schedules and workloads.

Be explicit in your evaluation follow-up and points of improvement

As established earlier, there is a strong preoccupation by Millennials to focus on explicit objectives where instructors are clearly held accountable. In “*The Advantage of Leadership*”, Pat Williams describes that a high degree of transparency “is absolutely necessary when working with the Millennial Generation”.³⁵ To build upon what has been presented on the dyadic established in a productive teaching and learning environment, evaluations must be focused on offering constructive criticism with an openness to elaboration and an accountability

³³ Carlson, S. 2005, October 7. The Net Generation in the Classroom. Chronicle of Higher Education. Washington: The Chronicle. pp.A34-A37

³⁴ Pietersen, Willie. 2002. Reinventing Strategy: Using Strategic Learning to Create and Sustain Breakthrough Performance. New York: John Wiley and Sons. pp134-142

³⁵ Williams, Pat. 2008. The Advantage of Leadership: From Leadership Experts. New York: Advantage Media Group. pp.80-83

grounded in the rubrics and metrics established at the outset of a project in its outline. Millennials cannot accept evaluations without the possibility for discussion or support.

Though the following example is not likely feasible in large classes, it certainly expresses the intentions of this particular point. In a design studio course, projects are often evaluated in a nebulous of subjectivity; it is difficult to evaluate projects based on an absolute scale as accommodations for articulation, innovation, and comprehensiveness is incumbent on the design itself. As such, marks in these courses are often riddled with contention and ambiguity for students. In a clear address of the follow-up for constructive criticism and transparency, not only were rubrics provided, but contemporary technology was adopted to record MP3 reviews of each student's project in iTunes to ensure that students understood the rationale behind the marks they received (Figure 5). This afforded the professor an opportunity to also offer constructive feedback to ensure students would only stand to improve in the course rather than be left with additional questions on what was done correctly.

Name	Time	Date Added	Date Modified	Kind	Album	Artist	Description
Alken-2B	4:14	1/21/2008 2:59 AM	6/13/2007 11:25 AM	MPEG audio file			
Alken-2C	5:57	1/21/2008 2:59 AM	6/21/2007 12:13 AM	MPEG audio file			
Alken-2C	1:32	1/21/2008 2:59 AM	6/21/2007 12:40 AM	MPEG audio file			
Alken_Fogel-2	10:03	1/21/2008 2:59 AM	7/19/2007 9:40 PM	MPEG audio file			
Alken_Fogel-3A	11:30	1/21/2008 2:59 AM	7/12/2007 11:02 PM	MPEG audio file			
anytime	0:01	1/21/2008 2:59 AM	6/26/2002 11:47 AM	WAV audio file			
bad-beep	0:00	1/21/2008 2:59 AM	6/25/2002 9:50 AM	WAV audio file			
Bare1	3:59	1/21/2008 2:59 AM	6/5/2007 8:16 PM	MPEG audio file			
Bare1	3:59	1/21/2008 2:59 AM	6/5/2007 8:16 PM	MPEG audio file			
Bare1-2B	7:38	1/21/2008 2:59 AM	6/13/2007 11:24 AM	MPEG audio file			
Bare1-2B	7:38	1/21/2008 2:59 AM	6/13/2007 11:24 AM	MPEG audio file			
Bare1-2C	5:36	1/21/2008 2:59 AM	6/21/2007 12:12 AM	MPEG audio file			
Bare1_Veenstra-2	9:41	1/21/2008 2:59 AM	7/19/2007 9:41 PM	MPEG audio file			
Bare1_Veenstra-3A	11:58	1/21/2008 2:59 AM	7/12/2007 10:59 PM	MPEG audio file			
beep-warning	0:00	1/21/2008 2:59 AM	6/25/2002 9:50 AM	WAV audio file			
blp	0:00	1/21/2008 2:59 AM	6/25/2002 9:39 AM	WAV audio file			
blp2	0:01	1/21/2008 2:59 AM	6/25/2002 9:41 AM	WAV audio file			
Boake-2	5:48	1/21/2008 2:59 AM	6/10/2007 7:13 PM	MPEG audio file			
Bova	2:48	1/21/2008 2:59 AM	6/5/2007 8:15 PM	MPEG audio file			
Bova	2:48	1/21/2008 2:59 AM	6/5/2007 8:15 PM	MPEG audio file			
Bova-2B	4:59	1/21/2008 2:59 AM	6/13/2007 11:26 AM	MPEG audio file			
Bova-2B	4:59	1/21/2008 2:59 AM	6/13/2007 11:26 AM	MPEG audio file			
Bova-2C	8:04	1/21/2008 2:59 AM	6/21/2007 12:15 AM	MPEG audio file			
Bova_Marban-2	7:53	1/21/2008 2:59 AM	7/19/2007 9:41 PM	MPEG audio file			
Brinde-2	8:00	1/21/2008 2:59 AM	6/10/2007 7:11 PM	MPEG audio file			
Brinde-3	5:11	1/21/2008 2:59 AM	8/13/2007 12:40 AM	MPEG audio file			
Brinde-4	4:15	1/21/2008 2:59 AM	8/13/2007 5:24 PM	MPEG audio file			
Brinde-5	3:19	1/21/2008 2:59 AM	8/30/2007 8:51 AM	MPEG audio file			
Chan-2	5:54	1/21/2008 2:59 AM	6/10/2007 7:13 PM	MPEG audio file			
Chan-3	4:13	1/21/2008 2:59 AM	8/13/2007 5:24 PM	MPEG audio file			
Chan-4	6:30	1/21/2008 2:59 AM	8/13/2007 5:24 PM	MPEG audio file			
charge	0:02	1/21/2008 2:59 AM	6/25/2002 9:43 AM	WAV audio file			
Chen-2	4:53	1/21/2008 2:59 AM	6/10/2007 7:13 PM	MPEG audio file			
Chen-3	5:11	1/21/2008 2:59 AM	8/13/2007 12:38 AM	MPEG audio file			
Chen-4	6:42	1/21/2008 2:59 AM	8/13/2007 5:24 PM	MPEG audio file			
Cheng-3	3:54	1/21/2008 2:59 AM	8/30/2007 8:48 AM	MPEG audio file			
Cheng-2	3:55	1/21/2008 2:59 AM	6/10/2007 7:13 PM	MPEG audio file			
Cheng-3	5:50	1/21/2008 2:59 AM	8/13/2007 12:37 AM	MPEG audio file			
Cheng-4	4:06	1/21/2008 2:59 AM	8/13/2007 5:24 PM	MPEG audio file			
Cheng-5	4:24	1/21/2008 2:59 AM	8/30/2007 8:48 AM	MPEG audio file			
Chenrauk	2:59	1/21/2008 2:59 AM	6/5/2007 8:15 PM	MPEG audio file			
Chenrauk	2:59	1/21/2008 2:59 AM	6/5/2007 8:15 PM	MPEG audio file			
Chenrauk-2B	4:39	1/21/2008 2:59 AM	6/13/2007 11:24 AM	MPEG audio file			
Chenrauk-2B	4:39	1/21/2008 2:59 AM	6/13/2007 11:24 AM	MPEG audio file			
Chenrauk-2C	6:53	1/21/2008 2:59 AM	6/21/2007 12:15 AM	MPEG audio file			
Chenrauk_Ho-2	9:56	1/21/2008 2:59 AM	7/19/2007 9:41 PM	MPEG audio file			
Cho-2	7:38	1/21/2008 2:59 AM	6/10/2007 7:13 PM	MPEG audio file			
Cho-3	5:23	1/21/2008 2:59 AM	8/13/2007 12:40 AM	MPEG audio file			
Cho-4	8:57	1/21/2008 2:59 AM	8/13/2007 5:24 PM	MPEG audio file			
Cho-5	4:50	1/21/2008 2:59 AM	8/30/2007 8:51 AM	MPEG audio file			
Christou	4:33	1/21/2008 2:59 AM	6/5/2007 8:17 PM	MPEG audio file			

Figure 5. An example of a series of a course's recorded MP3's offering students constructive feedback

Design projects that are attractive and relevant to today's student

There are as many approaches to making pedagogical objectives appeal to students as there are topics to teach. Many educators stumble in determining methods to make their projects attractive and relevant to their students. What researchers on teaching Millennials have focused on are classified as the "Four Defining Features of Education" which are choice, standards, teamwork, and collaborative learning.³⁶ Successful projects should demonstrate a high level of sensitivity to these parameters, in particular choice that allows for establishing one's individuality and identity. As seen with the dramatic spike in youth-generated websites with the onset of social networking and blogs, it is clear that Millennials find academics only as useful as its relevance to their own interests.

In past years of a Digital Architecture course where students learned about three-dimensional computer modeling, a case study project was traditionally assigned to students who would in turn research and remodel the building. Though it had its merits, the project often became an arduous task which left students quite drained and focused only on the minimum set of tools required to create the various images. Recently this project was reassessed in order make it more relevant and attractive to current students. Rather than a case study, students were asked to find a building or scene from their favorite movie and model it instead (Figure 6). The drastic differences between the previous years submissions and the newer one included a higher level of engagement and attention to detail (to simulate the scene) and at pedagogical level, students were far more interested in learning beyond the scope of tools taught in the class in order to model complex geometries – effectively leveraging an interesting project into a driver for a student's academic development.

³⁶ Bahr, Nan and Pendergast, Donna. 2007. The Millennial Adolescent. Camberwell: Aust Council for Ed Research. pp 270-275



Figure 6. A scene from a case study digital model of the dojo from the Matrix movie

Perspective THREE: Professional Industry

Make students understand how the material facilitates professional growth

Today's academics face the challenging task of progressively pursuing innovative, cutting-edge research interests for advancement of a particular field yet simultaneously must temper what is taught in the classroom with a strong grounding professional practice in order to ensure students realize the application and relevance for their own development. Especially while teaching foundational material, "novice students must learn the explicit knowledge and transform it into the tacit knowledge that allows application" while in senior levels "the experienced professional can learn new explicit knowledges that challenge existing modes of... practice".³⁷

Bring the class examples from the "real world"

Teaching cannot be isolated from the real world outside of the classroom. To

³⁷ Piotrowski, Andrzej and Robinson, Julia. 2001. The Discipline of Architecture. Minnesota: University of Minnesota Press. p79

fail to make the connection, application, and relevance of course material with students' future development would risk creating "a highly educated useless person... very skilled in doing school-related tasks, but lacking the abilities necessary to solve problems independently in a real-world environment."³⁸ Therefore teaching mandates an application of knowledge developed in academia applied to practice. This may be accomplished by drawing from local professional organizations for guest speakers or even as far as bringing students to potential employers in order to develop a sense of what is done in practice upon graduation. Beyond bridging these two realms simply through meetings, it is extremely important to contextualize and even role-play in order to ensure student grasp the relevance of what is taught in class.

In an example from a course taught on urban development and zoning application, it became clear that students were simply learning the different phases of designing a building by rote rather than fully understanding the real process. As a result, it was decided that bringing in a real project that had engaged particular topics including zoning application into the classroom was important to applied learning. More importantly, when asked what they would have done had they been various stakeholders (role-play), the students immediately understood the value of seeing projects from different perspectives and the real impacts on the real world.

Focus on the benefits of applying the material to a spectrum of careers

As early as the 18th century with Rousseau to the supportive research by contemporary psychologists, "learning towards practice" has been emphasized as critical to learner-centered education.³⁹ According to a US Department of Labor study, "that young people entering the workforce today will likely change their jobs seven to ten times in their careers".⁴⁰ Though postsecondary institutions provide a rich education that can be extremely focused, for many undergraduates, these institutions also provide an education robust enough to provide entry into a range of career choices. Regardless of the type of careers students graduate into, the focus for faculty is to ensure that the material taught in any course can be connected to potential career paths.

³⁸ McCain, Ted. 2005. Teaching for Tomorrow. Thousand Oaks: Corwin Press.

p3

³⁹ Al-qawasmi, Jamal and Vasquez De Velasco, Guillermo. 2006. Changing Trends in Architectural Design Education. Amman: Center for the Study of Architecture in the Arab Region. p108

⁴⁰ Federal Citizen Information Center. 2005. Changing Your Job. 12.12.2005 http://www.pueblo.gsa.gov/cic_text/employ/change-jobs/changjob.htm (12.04.2008)

In the digital communication course, it was imperative to inform students that despite the manual drafting and hand rendering skills developed in the previous term, students would have to learn the material on CAD drafting and modeling in order to stand a realistic chance at entering the architecture market. In order to underscore this point, excerpts from local architecture publications were posted up in order to validate the importance of CAD drafting in industry (Figure 7). Subsequent to that, another slide presented the range of careers afforded to students with strong backgrounds in architecture and digital visualization (CAD) including movie and video game design.

“The capacity to work independently, strong representational skills, and digital and physical modeling abilities are essential, as is the ability to work collaboratively and contribute to a positive studio culture. Students must have their own laptop computer. Remuneration will be competitive and based on the applicant's capacities.”
- Velikov + Thün

“We are a small office in downtown Toronto and are looking for someone who is interested in using their 3d modeling and rendering skills as an integral part of the design process for 3 fairly large projects at colleges and universities throughout Ontario.”
-Kongats Architects

“The successful candidate must be highly motivated, at ease interacting with architectural staff, and knowledgeable of the latest CAD technologies. Candidate should have previous architecture background or have good understanding of the architecture industry.”
- KPF Associates

“You must have a demonstrated ability to communicate your ideas in written and drawn form. A proficiency in CAD both 2-D and 3-D, Microsoft Office and Adobe Creative Suite Programs a must.” -Taylor/Hazell Architects

GUIDELINE THREE: PROFESSIONAL INDUSTRY | Education Applied to Careers

Figure 7. Samples of advertisements for architecture firms stress the value of what is taught in the classroom

Explain the ramifications of failing to apply knowledge from the course

Dubbed many terms ranging from case methodology to learning through storytelling, recounting the value of what is taught in the classroom as applied to the

real world is a “reflective learning process...[able to] use ideas, strategies, and processes we present to prepare students better for the rigours and uncertainties inherent in professional practice”.⁴¹ Case studies are only of value if they focus on a key message. Much is learned within industry based on simple précis discourse between corporations however in order to convey the same value of what is taught in class often is only made relevant through precedents of failure from the professional world. Millennials are often fixated on marks which is why many academics fear these students will exhibit a failure in understanding causality of their actions. Errors in the workplace can often lead to loss in efficiency, time, and finances; in some cases the results may be fatal.

Within the context of an architectural structures and engineering course, it became clear that students did not appreciate the value of what was being taught. To many students, the learning ended in a number that was either right or wrong. In order to draw the connection between the course and professional application, it was important to have students correlate specific topics with significant disasters (ranging from a Korean building collapse to the September 11th World Trade Center Attack) (Figure 8). This made it very clear that a failure in one course could lead to far more than a low grade point average – rather, the deaths of hundreds in a building.

⁴¹ McDrury, Janice and Alterio, Maxine. 2003. Learning Through Storytelling in Higher Education. London: Routledge. pp 8-15



Figure 8. The use of case studies to explain the ramifications of dangerous architecture

Perspective 4: Personal Growth

Cater to the diverse needs and learning styles of today's student population

In "Grown Up Digital", Tapscott reveals the diversity of platforms Millennial students communicate on and goes so far as to state that even contemporary instantaneous communications such as email is "a more formal method of communication" and dated when compared to the quick abbreviated comments found in contemporary texting, social networking, and phone channels.⁴² Simultaneously a tide of an estimated 15.8 million students from different backgrounds and learning styles are expected to enroll in post secondary institutions

⁴² Tapscott, Don. 2009. A Generation Bathed in Bits. Grown Up Digital. New York: McGraw Hill. pp45-48

by 2012 with focus on such a trajectory as a natural progression from high school.⁴³ Undoubtedly contemporary and prospective instructors must address this interconnectedness and diversity in establishing a strong relevance of course material with personal growth.

Personal observation and Recreational Application

Tapscott articulates the astute observational power of these students and their constant drive towards seeking “innovative ways to collaborate, entertain themselves, learn, and work.”⁴⁴ The combination of optimism, self-assuredness, inquisitive instinct, near-seamless aptitude with technology, and access to an unprecedented scope and volume of information, it comes as no surprise that this group of students has the capacity for great innovation as a result of applied learning. Running in tandem with the recommendation for choice in offerings for the Millennial generation is the notion of self-expression. Students find it far easier to learn when the material may be applied to their specific situations and responses to problems they have observed in their environment.

In a recent study, for the Pew Internet & American Life Project, it was revealed that 57% of teens created content placed upon the Internet with a significant portion authoring websites and online multimedia.⁴⁵ As their communities develop in traditional interactions and expand online, Millennials seek innovative ways to apply their knowledge and skills to define and express themselves to their peers.

During a graphic and industrial design course, a project was given to students to propose new packaging for a ubiquitous product of their choosing. Rather than force students to utilize software to develop proposals for something they did not care about, what resulted were innovative designs based on keen observations of strengths and weaknesses of existing packaging and the application of software skills to develop a comprehensive redesign proposal (Figure 9).

⁴³ Coomes, Michael and DeBard, Robert. 2004. *Serving the Millennial Generation: New Directions for Student Services*. Detroit: Jossey-Bass.

⁴⁴ Tapscott, Don. 2009. *A Generation Bathed in Bits*. Grown Up Digital. New York: McGraw Hill. pp35-38

⁴⁵ Lenhard, Amanda. and Madden, Mary. 2005. *Pew Internet & Life Project. Reports. Family, Friends, and Community. Teen Content Creators and Consumers*.

http://pewinternet.org/pdfs/PIP_Teens_Content_Creation.pdf (1.12.2009)



Figure 9. Student redesign of a gum package based on personal evaluation of the original design's features

Incentive drivers

Millennials are driven by many factors other than academic excellence ranging from recognition and approval to experience to add to a resume. Fran Kick draws the analogy of academic performance with inherent student motivation based on Maslow's famous Hierarchy of Human needs.⁴⁶ Students are quick to understand the relevance of education when contextualized with physiological and security needs (i.e. learning these concepts will provide a basis for a career

⁴⁶ Kick, Fran. 2005. What Makes Kids Kick. New York: Instruction_Design Concepts. pp 104-109

which will in turn provide income to feed, shelter, and protect oneself) however it behoves instructors to provide connections with the course material and potentially addressing, if not fulfilling, social, self-esteem, and self-actualization needs.⁴⁷ —

In collaboration with another professor, students were asked to enter a national steel structure design competition. The synergies between the digital communication curriculum and building construction/detailing course allowed for these first year students to produce well-developed and well-articulated design proposals that ultimately established a tradition of winning the national design competition beating out upper year and graduate students from other universities (Figure 10). What was clear from the students was that extra effort was put into the project not because of the coordination between two courses, rather it was the grandness of the award, financial reward, publication of the work, and the project's presence in a resume and portfolio which served as incentive.

⁴⁷ It should also be noted that this generation “live for and by their ideals” which could prove to be an incredibly strong point of discourse for postsecondary instructors to leverage in teaching their course material.
Winograd, Morley and Hais, Michael D. 2008. *Millennial Makeover: MySpace, YouTube, and the Future of American Politics*. Newark: Rutgers University Press. pp. 82-85



Figure 10. An example of a first year steel design entry motivated toward excellence by multiple incentive drivers

Remain sensitive to the diverse methods of learning

With their technical savvy, ability to multitask, and propensity for control, Millennial students have developed an affinity for multiple pedagogical sources ranging from ubiquitous internet text and multimedia sources including blogs, YouTube clips, and web games all the way to less technologically-driven educational devices such as physical models or in-class demonstrations. According to the Chronicle of Higher Education, “Millennials expect to be able to choose what kind of education they buy, and what, where, and how they learn. To meet the demands of these new students, they say, colleges must rethink how they operate.”⁴⁸ Quite simply, contemporary students “are more apt to take control of their

⁴⁸ Carlson, Scott. 10.07.2005. The Net Generation Goes to College. The Chronicle of Higher Education.
<http://chronicle.com/weekly/v52/i07/07a03401.htm> (1.03.2009)

learning and choose unconventional, technological methods to learn better⁴⁹”
According to author Eric Garland, “.. young people today are forming attitudes about how they receive data that are different from any other generation’s. Millennials expect data to be easy to locate, searchable, and free.”⁵⁰

Pioneering the first online architecture courses mandated a break from conventional pedagogical models. Even with MP3 recordings of project reviews, online course surveys, discussion forums, and even shared databases, the online course did not feel energized. It was not until narrated video tutorials were developed for students learning at different paces began to make the material more accessible. Once that occurred, the class expanded beyond the preordained course framework and spilled onto social networking sites which offered more robust features for sharing information and synchronizing activities. This demonstrated that even the most “progressive” and “innovative” of instructors have much to learn with respect to communication paradigms and preferences of the Millennial generation (Figure 11).

⁴⁹ The library, once regarded as a foci of academic learning has had to adapt to the innovations in methods of acquiring information.
Carlson, Scott. 10.07.2005. The Net Generation Goes to College. The Chronicle of Higher Education.

<http://chronicle.com/weekly/v52/i07/07a03401.htm> (1.03.2009)

⁵⁰ Garland, Eric. 2006. Future, Inc. New York: AMACOM Division of the American Management Association. pp223-225

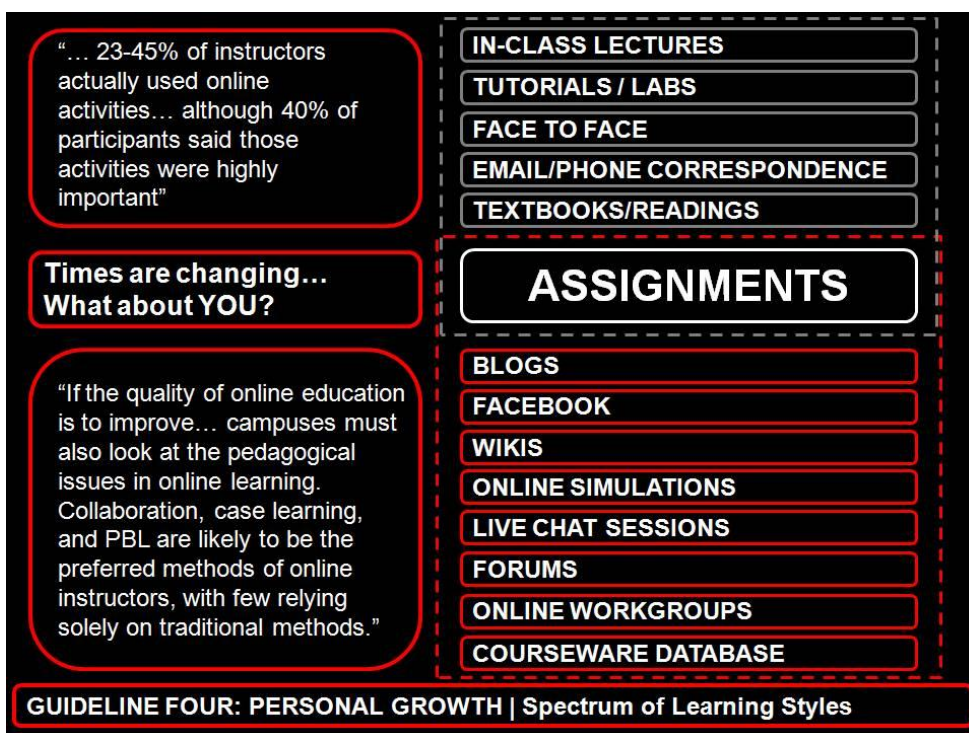


Figure 11. Framing assignments and pedagogical paradigms within the diversity of learning channels available

Perspective 5: Peers

Appropriately use casual, group, and team projects to drive learning

That Millennials are team-oriented is clear to those who have taught in the past five years, however it is important for professors to ensure that configuring group work must be clearly directed towards pedagogical objectives and enhancing the accessibility of the material as opposed to alleviating marking and evaluation loads. The nature of contemporary collaboration is a characteristic of education that these students have been reared upon since childhood.⁵¹

⁵¹ O'Brien, Judith, and Mills, Barbara, and Cohen, Margaret, and Diamond, Robert. 2008. *The Course Syllabus: A Learning-Centered Approach*. New York: John Wiley and Sons. pp. 1-4

Have others contribute to individual learning

For Millennials, “the preferred learning environment combines teamwork and technology.”⁵² One need only explore the recreational use on online communities and social networking sites to realize that Millennials are very much driven to information exchanges within a virtual environment. As Metzger and Flanagin describe in “*Digital Media, Youth, and Credibility*”, students currently “find corroboration in alternative locales” off and online (i.e. Wikipedia, blogs, recommender sites) as this confident generation is impelled to believe “that the only real authorities in the digital world are themselves.”⁵³ Their peers are their harshest and most trusted critics. As a result, it may be a valuable strategy for instructors to allow students to critically examine each other’s work. Though the possibility of collusion may arise in marking instances, it may be useful to preface such exercises with marks being assigned based on the instructor’s evaluation of the criticism levied.

In the graphic and industrial design course, this peer criticism and evaluation was extremely useful in not only efficiently push designs closer to a comprehensive conclusion, but also brought together sharp opinions from peers intimately aware of the project parameters who could offer valuable insights. Each week students would bring a single sheet of paper outlining their design. This would in turn be circulated to others who would in turn offer criticism on the back of the sheet.

Group projects should be enjoyable learning experiences

Team-based projects encourage a mutual support network

When developing group projects, instructors must be mindful of not only the pedagogical objectives students must address, but also the level of accessibility and engagement an assignment may elicit. A spectrum of academics and researchers has universally agreed that Millennials “are accustomed to working in groups.”⁵⁴ Rather than positioning classmates as competitors, Millennials look

⁵² Coates, Julie. 2007. *Generational Learning Styles. Generation Y – The Millennial Generation*. River Falls: LERN Books
<http://honolulu.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachtip/GenY.htm> (12.28.2008)

⁵³ Metzger, Miriam and Flanagin, Andrew. 2007. *Digital Media, Youth, and Credibility*. Boston: MIT Press. pp164-170

⁵⁴ Williams, Delmus, Nyce, James, and Garten, Edward. 2005. *Advances in Library Administration and Organization*. New York: JAI Press and Emerald Group Publishing. pp. 286-288

to each other in a unified supportive manner; “their friends are critical sources for advice, support, validation, and the accomplishment of both personal and broader goals.”⁵⁵ Understanding this is important in developing group projects that not only fulfill pedagogical objectives but encourage learning beyond the confines of weekly classes and assignments.

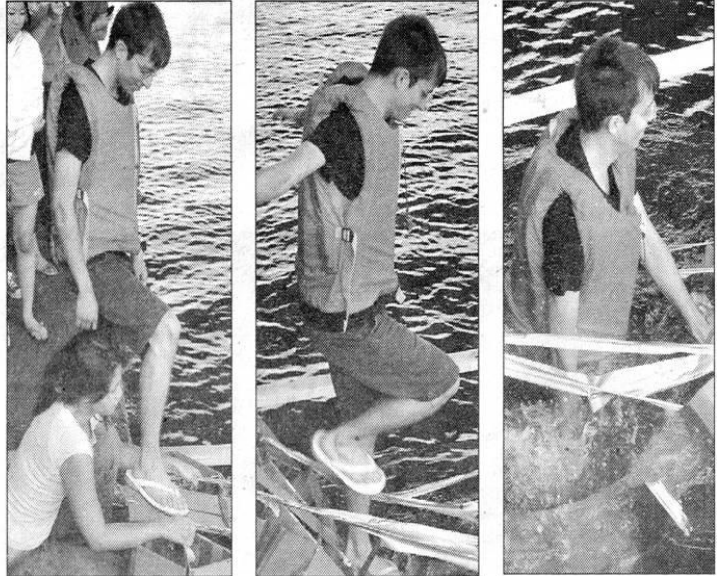
In a group project for a foundational structural engineering course, students were asked to design a bridge out of cardboard in order to examine structural loading conditions. As the project awarded points based on the number of group members able to cross the bridge (which was placed over a river), the project became an enjoyable friendly competition which not only encouraged group activity, but catalyzed the energy for the remainder of the term in what typically is a “boring” technical course (Figure 12).

⁵⁵ Winograd, Morley and Hais, Michael D. 2008. *Millennial Makeover: MySpace, YouTube, and the Future of American Politics*. Newark: Rutgers University Press. pp. 84-88

Learning the hard way

Second-year School of Architecture student Alex Fernandez tests a bridge on the Grand River Sunday and finds out the hard way that there's a flaw in the design. Students from the school were challenged by professor Vincent Hui to design a 10-foot span bridge using only cardboard and duct tape that would sustain the weight of each member of the group crossing over it.

JUDEE RICHARDSON SCHOFIELD,
SPECIAL TO THE TIMES



GUIDELINE FIVE: PEERS | Enjoyable Group Learning Experiences

Figure 12. Group learning experiences should be developed as enjoyable mutual working environments

Conclusion

The various dimensions of pedagogy outlined in this paper seek to encourage educators to remain vigilant in evolving their teaching with the newest cohort of students, the Millennials. As these students enter postsecondary institutions, educators must understand and evolve with the new mindsets they bring to the classroom by remaining sensitive to how students view pedagogy through their professors, projects, peers, professional industry, and ultimately their own personal values.

3 Diving into the unknown – questions arising from transformation of learning

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ABSTRACT

Our alternative learning environment in HAAGA-HELIA Porvoo unit is called SYMBIO – a symbiosis between the students and entrepreneurs. SYMBIO aims at enabling sustainable and innovative learning experiences among all participants and at the same time strives to enhance regional development. Learning in SYMBIO is based on research, development, learning partnership and experimenting. The learning process begins with formulation of meaningful questions and grows into a search for possible answers to these. We call this research based approach. In this paper we try to make visible the questions that arise among the different participants, our colleagues and in our organisation when learning is transforming. Our aim is to better understand some of the assumptions and obstacles that are attached to transformation of learning and teaching.

Introduction

'We need people who are able to formulate problems so that they benefit others, not only those who are able to solve them.' (Entrepreneur Jyrki Kontio 6.11.2008)

The Finnish society has developed fast, which has set high pressure on our education systems and other organisations. Due to this change also teaching and our understanding of learning have transformed. Working life needs experts who are able to set aims, formulate problems, navigate and find new solutions. In higher education institutions (HEI) we educate experts, who are able to cope with unique and complex problems in uncertain situations. (See e.g. Tynjälä

2008; Isopahkala-Bouret 2005). This in turn means also emerging challenges for teachers.

Helakorpi (2008) states, that learning organisations have been the Finnish way to cope in the change. Old learning methods, which were based on individualistic rote learning techniques and significance of outcome, have been replaced by methods which emphasize the importance of deep understanding. Professionals in learning organizations have to be able to develop and analyze their own work and work community.

Tynjälä (2008, 124-125) refers to Robert Reich's (1995) thoughts about the three-tiered work force in most advanced economies. At the bottom are workers, who offer personal service. In the middle are production workers, who perform simple and repetitive tasks. At the top are symbolic analysts, who already make more than one fifth of the whole work force in advanced economies (Reich 2005). HEIs educate students to these tasks, which require self-direction as well as social, networking and communication skills. According to Tynjälä (2008) these skills can be best learnt in integrative pedagogy by combining different elements of expertise. Theoretical knowledge is used as a tool in practical work and respectively experimental knowledge will be conceptualized.

Finnish Universities of Applied Sciences (UAS) have participated in the process of developing the European Higher Education Area (Arene 2007). As part of this development process UAS have framed national guidelines for subject-specific competences and non-specific, generic competences. Generic competences can be applied to all degree programmes and they lay a foundation for the student's participation and collaboration in working life as well as for his/her professional development. The main generic competences of polytechnic graduates have been divided into following competences

- Learning competences
- Ethical competences
- Communicative and social competences
- Development competence
- Social and organisational competence
- Internationalisation competence

These desirable competences are difficult or even impossible to be gained in traditional class room teaching. New learning environments try to encounter these challenges by creating environments which resemble working life.

While working as advisors in SYMBIO, we have encountered a lot of questions, which we try to discuss further in our paper.

SYMBIO students: Where do I start? Am I doing the right things? Should I do something more? What to do? What am I going to learn here? What to expect? What is my role? How can I plan my work so that things will be done in time? Could the teacher give clearer guidelines in the beginning?

SYMBIO advisors: What is sufficient amount of guidance and support? How to cope with the old structures which are in conflict with our understanding of learning? How to evaluate learning? How to break the underlying assumptions about the roles of students and teachers? How to cope with uncertainty?

Our colleagues: How to insure that a student learns the right things? How can we work like this in big groups? Is this efficient? Is this suitable for everyone? What happens to my role as a professional? How are resources allocated? What is different?

In terms of research methods our approach can be described as a participatory (action) research. We are both advisors in SYMBIO and we simultaneously document, reflect on, analyse and try to conceptualise the work in progress. Our research material includes thus an array of meetings and planning sessions, learning diaries (both students and advisors), written feedback from the students and materials that were produced during HAAGA-HELIA's development days.

SYMBIO as an example of teaching in transformation

Our alternative learning environment in HAAGA-HELIA Porvoo Unit is called SYMBIO – a symbiosis between the students and entrepreneurs. SYMBIO aims at enabling sustainable and innovative learning experiences among all participants and at the same time strives to enhance regional development. The aim is to develop a learning forum resembling more a real working environment than a traditional school-going-setting (see e.g. Miettinen 1999). Here, the participating learners (usually called “students”, “teachers” and “working life partners”) would plan, develop and act in the learning forum together, with the prime purpose of learning. (Lassila et al. 2007.)

SYMBIO was developed together with entrepreneurs, students and teachers in the autumn 2006 and it started to operate in January 2007. SYMBIO aims to offer the students a different and challenging alternative to learn close to working life. Learning in SYMBIO is based on the following themes:

1. Developmental competence - we strive for having actual developmental tasks which are based on companies' needs and simultaneously to increase the participants' developmental competence.
2. Research based approach - the learning process begins with formulation of meaningful questions and grows into a search for possible answers to these.
3. Learning partnership - entrepreneurs, students and advisors encounter each other as equals in SYMBIO.
4. Experimental way of working - we are exploring new modes of activity, learning and developing.

The learning process begins with formulation of meaningful questions and grows into a search for possible answers to these. We call this research based approach. Developmental competence means that we strive for having actual developmental tasks which are based on companies' needs and simultaneously to increase the participants' developmental competence. Learning partnership describes our roles in the learning process. All actors - entrepreneurs, students and advisors - encounter each other as equals in SYMBIO. We also try to develop our own practices and this idea is included in our experimental way of working. For a student SYMBIO is a possibility to take power over his own learning process and grow to become an expert by working with a real case.

"...This learning method forces student to learn, and in this way the knowledge we learn is more comprehensive than when teachers explain. Because we really have to apply it." (Student N1, 2008.)

SYMBIO operates as research and development partner in the region. SYMBIO functions also as a networker and contact point between working life, students and teachers. When conducting authentic research and development work the students acquire skills, knowledge and attitudes which are needed in the working life. In the Figure 1 we have described SYMBIO's learning process. We try to make the learning process as transparent as possible. Students get guidance in weekly meetings and in virtual learning environment.

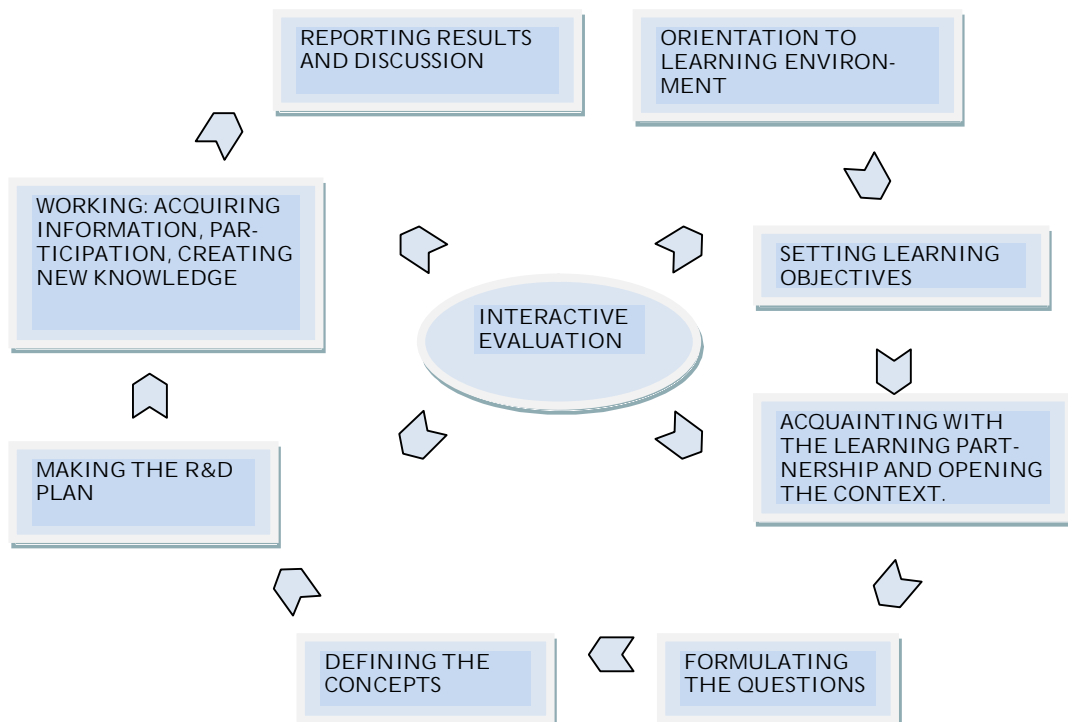


Figure 1. SYMBIO's learning process.

In the beginning of the learning process we try to create common understanding of what is SYMBIO as a learning environment. When the student's role changes from passive receiver to active doer it often causes frustration and the change does not happen overnight. The aim of the orientation is to challenge the student to think of his own learning styles and conceptions of learning. Working life partners join the learning process at a very early stage as the questions arise from authentic problems. Research is part of the learning process in many ways. The main principal is that the object of research and development is not set in advance but we approach them as partially specifying and developing research objects, which are defined and outlined by all participants.

The first step in trying to answer the research question is to try to explain the phenomena through different concepts. Students acquire information from different sources and they try to construct the theoretical framework, which guides the research and development task. Research question, concepts and development ideas are discussed in workshops. The working stage can take many forms depending of the working life partner's needs and this stage can include

working in the partner organisation, gathering research material, writing research report or/and executing a project. At the final stage of the learning process all learning partners gather together to discuss the results, development suggestions and learning experiences.

Transformation of learning sets new challenges for guidance. Also the teacher is required to have new competences: ability to cope with uncertainty, flexibility, networking skills, social skills and communication skills. In SYMBIO we have several advisors who can give guidance for the students. Working takes place in a space which resembles normal office. Two advisors also work in the same space full time. This enables the students to have guidance during the whole working day and learning processes become much more transparent for the advisors.

SYMBIO is open for all HAAGA-HELIA's students. Students work in teams of 10 – 20 persons having a particular theme or alone with a certain company. Altogether 50 companies or organizations have actively participated in SYMBIO and they have had approximately 200 student partners.

In SYMBIO all participants are considered as learners. Taking this active role often seems to be the biggest obstacle for students.

"I need more guidance, self learning method might work for some but I come to school to be taught. I can self learn at home." (Student N2, 2008.)

We have noticed that quite often students have difficulties in understanding the connection between their studies and work life. This can be partly explained by Miettinen's (1999) argument that education has not been seen primarily as an activity of the society but as activity within the school (school-going activity). Learning results thus to managing the school-going activity, where the object of learning are the school books and learning takes place in a class room where the teacher asks the students topics that he himself knows. This is one of the major challenges we try to overcome in SYMBIO, namely, to deconstruct the notion of learning as school-going-activity, and establish activities that support learning in society and in working life. (Lassila et al. 2007.)

"...The learning method is good because it gives us the freedom to learn by ourselves instead of being in a boring class listening to things that we forget in the next day. I believe I learnt a lot as a student but also as a person. Gave much more real experience to the working life." (Student N3, 2008.)

When planning and further developing SYMBIO (see Lassila et. al. 2007) we have been inspired by the review of Korpiaho et al. on a practice-theoretical per-

spective of teaching and studying in Management Education. Other important theories during the process have been 'situated learning theory' (Lave & Wenger, 1991, Handley et al., 2005), 'activity theory' (Engeström & Middleton, 1998; Engeström, 2004; Engeström et al., 2005), 'communities of practice' (Lave & Wenger, 1991; Wenger, 1998) and learning in 'practice based' context (Gherardi & Nicolini, 2003).

Who is an expert – In search for new roles

Many of the questions that we have presented in this paper can be explained by how we understand expertise and how that understanding has changed.

According to Isopahkala-Bouret (2008)

1. Expertise is developed in interaction (communities of practice). It presumes participation and social acknowledgement.
2. Expertise is based on some skill or knowledge.
3. An expert is able to affect things and further aims that s/he considers important. The person has to be able to trust on his own expertise and feel confident in professional tasks.

Isopahkala-Bouret (2008) claims that experience is context bound and it can be invalidated by questioning the significance of person's knowledge. This can be done by creating circumstances, in which the person is not able to act professionally and by eroding the person's self confidence and feeling of professional aplomb. Acknowledgement can be received by colleagues, superiors and customers. Professional way of action calls for positive attitude towards learning, adaptability and willingness to meet new challenges. This can be applied both to teachers and students.

"...The students are much more motivated to learn through real life challenges and projects and through independent learning method. The environment creates a feeling of being useful and respected..." (Student N4, 2008.)

Changes and reforms can unbalance the feeling of confidence and trust. In the class room teacher's own experience of professionalism can be retained. The teacher feels that he is able to control the learning process. When the working life enters upon the scene the feeling of trust and confidence is shaken: teacher meets unsecure and complex situations and working life is able to evaluate teacher's expertise. In the changing situation teacher's traditional methods can be criticised and his expertise may be underestimated.

Also the students have their own views of teacher's role and expertise. *'The teacher has to know and teach. I do not need school for self learning. I can not know and have the competence'*. How much these kind of comments tell us about student's role and his own self-respect? One very commonly heard comment is that 'it is only student work' and this comment can be said by a teacher, entrepreneur or by the student himself. Students are often described as irresponsible and their quality of work is expected to be uneven. Due to earlier experiences it is difficult for the student to adapt to the change and new role, to be equal learner alongside with the teacher. However, when creating conditions for experiencing expertise, it will enable the change.

"I am more diligent because I do this work for myself and for the entrepreneur, not for the teacher. I really have to keep what I have promised, I feel there are high requirements for my work and I can see what is the benefit of my work." (Student N6, 2008.)

Many teachers in our institution think that the students should first learn the basic things through traditional methods. This is a challenge which we encounter continuously in SYMBIO.

"...SYMBIO- based learning emphasized learning through research and development. As I understand it students may need basics tools (theories) which are more or less developed in a classroom- like learning environment..." (Advisor N7, 2009)

If the organisation is striving for research and development based approach, we argue that these elements should be present from the very beginning of the studies. This would enhance elements of expertise and the learning process would gradually increase students' competences. In SYMBIO we have to use a lot of resources to orientation, because the preceding study modules mainly include traditional class room teaching. This is hard for all participants. In SYMBIO students have difficulties in understanding their responsibility, as they are suddenly expected to take responsibility of their own learning. Students have difficulties in starting to work and they can feel frustrated. Advisors' workload increases, because orientation takes a lot of time. This concern about orientation can also be noticed in the advisors' feedback.

"In the beginning of each developmental project, involved teachers/advisors should take some sessions in a more traditional way as to "explain" or to increase students' understanding of what is required in the developmental project. Failing to do so may lead to a waste of time as they struggle to understand what is required from them." (Advisor N7, 2009)

Even if the student is active in the learning process and he is responsible for his own learning, it does not mean that guidance is not needed. In fact we claim that the significance of guidance just grows and the nature of guidance changes. Teachers meet new challenges when they try to find the balance between appropriate amount of guidance and self-direction. The advisor has to be sensitive and understand how much and when guidance is needed without ending up in controlling the learning process or 'to know' on behalf of the student. If there is not enough guidance the student can become distressed and feeling of excessive freedom can lead to poor learning results.

Feelings of anxiety and uncertainty are challenging both for teachers and students and these feelings bring the significance of guidance to a totally new level. As advisors we sometimes feel unsure, whether there has been enough guidance available at the right time of the learning process. Even if the beginning of the learning process has included a lot of uncertainty and questions of what is right kind of guidance and enough guidance, in the last evaluation discussions students often find these feelings to be essential part of the learning process. They think that without feelings of anxiety, they would not have been able to experience those unique learning insights.

Obstacles hindering the transformation of teaching

Teachers' changing tasks and transforming expertise have been common research topics during the past years (See e.g. Laakkonen 2003; Patrikainen 2000; Auvinen 2004). Combining the three tasks of UAS has been discussed lively. Why still the reality has changed very little from the 90's and our learning methods are still rather teacher centred?

How we relate ourselves to the basic philosophical concepts of learning affects our attitudes and behaviour as teachers. Our assumption about the nature of human being, knowledge, thinking and learning, form the basis for transformation of learning. If both teachers and students are not able to change their assumptions, it is quite difficult to reach change on organisational level.

Teachers work in different educational institutions in our Finnish society and as a consequence the context and circumstances of teachers' central tasks and work may vary. The word *teacher* has its' roots deep in our national identity and it affects our understanding of the role of a teacher. A Finnish teacher is supposed to cope on his own and he has more power to decide issues that concern his own work than his European colleagues. Teachers have always been highly ap-

preciated in our society and just the word itself is deeply embedded in our values (Väljörvi 2006, 15, 19–20).

Ahvenainen et al (2002, 218) have tried to explain why transformation of teaching is so difficult. One obstacle for change is the myth of a good teacher, which can unconsciously affect the teacher's identity. The myth is based on our understanding of 'a good teacher', who

- never makes mistakes.
- is always happy and patient.
- knows always more than students.

This myth ends up in an unreal role, which is exhausting to maintain and which prevents real learning partnerships. Equal learning partnership means that the advisor should be able to openly listen to what are the needs of the working life partner and to be prepared to give the responsibility of solving the developmental challenges to the student even if the process does not proceed as planned. As the process is unpredictable the teacher has to step out from the 'good teacher role' into the inconvenience zone which can bring failures, surprising changes and friction which is caused by encountering different people. Many teachers are afraid that their own expertise is not enough and that they will encounter questions which they are not able to answer.

As the outcomes of learning cannot be fully predicted it leads easily to arguments that the quality of learning cannot be high. This element of uncertainty has proved to be one of the biggest obstacles when looking for a shared understanding of learning among our colleagues within HAAGA-HELIA Porvoo.

Teacher's work is more and more interaction and co-operation with the external society. As UAS have their three different tasks, teachers should have readiness to participate in the dialogue with working life and willingness to develop their work as a consequence of this interaction. What is then the teacher's responsibility in doing good work and develop?

Ettling (2006) recommends all educators to develop a personal ethical creed; as educators our first responsibility is to educate ourselves. It is important that we acquire ethical competences "that can arise from the practice of intellectual, emotional, and spiritual rigor in our professional self-development, which then can offer us grounding and guidance in our every-day practice of transformative learning" (Ettling 2006, 65). Teachers can not expect e.g. learning competences, communicative and social competences and development competence from

their students if they are not ready to develop their own work and competences (Väljörvi 2006, 21, 24).

In Porvoo, Campus 2010 process has started a change process towards research and development –minded approach to learning. Our own prejudices have been under discussion during development days and the journey towards common view has started. The most difficult question seems to be, what should be the principals that everybody should follow? Do we agree about learning methods? There are no common principals of how to implement learning together with working life and what it really means and how it could be accomplished in teachers' work. (See Kotila & Peisa 2008.) We teachers do not have a common understanding what these concepts mean in our own work and we are wondering how this change should take place.

'What will happen if the roles change? What happens to my role as professional? I think it is scary.' (Advisor N9, 2008)

'PBL and inquiring learning... but what does it really mean, how do I really do it in my own course?' (Advisor N11, 2008)

Developing teachers' competences in line with the new strategies has not received enough attention. Pressure for change as well as expectations are growing and this leads to fear of losing the control of one's own work and professional status. Tools for handling this change are missing.

This dilemma became apparent also in Suhonen's (2008) research. Even if the aim to produce experts for working life was seen as the most important task for UAS, operating in regional research and development was only seen hypothetical. There is a dilemma between the wants of the teachers and what kind of competences and experience they have. Teachers also experienced a conflict between the strain coming from the management, working life and society in relation to their own capabilities. According to Suhonen (2008) teachers would be willing to develop but in their opinion they do not have the required capabilities to develop towards the new expertise. Lack of time and other resources were also seen as obstacles.

Working life and education have approached, but significant integration in larger scale is still rare. Both Stenström (2008, 130-131) and Tynjälä (2008, 125) refer to recent studies which claim that proficiency and expertise are still mostly acquired at work after graduation. In our experience some subjects are considered to be purely theoretical and therefore the working life connection is difficult. How could we lower the threshold to build working life contacts in traditionally theory

oriented subjects? Lecturing to big masses is considered to be efficient and it also gives the teachers clear conscience.

Co-operative working seems to enable research and development oriented work approach. According to Suhonen (2008) the way we calculate working hours is the biggest obstacle for co-operative working. Other obstacles are lack of time, lack of support by the employer and teachers' attitudes. Traditionally teachers' work has been defined as teaching and working hours have been based on number of contact lectures. The real change calls for new understanding of what we consider as teacher's work.

Conclusions

When learning and teaching are transforming, ability to cope with uncertainty is needed and it is hard mentally. How do we get the courage? When dealing with real life problems, there are tensions between people, agreements are not always kept and conflicts and uncertainties are essential part of the learning process. It is important to think, how we as teachers meet these situations and how we cope with them. In learning context solving conflicts is considered as extra work when it should be considered as part of normal work.

It is important to share a common understanding what are the aims of the learning process when we co-operate with working life. If we consider 'failures' as part of the learning process, mistakes can become socially accepted. This is closely linked to the question of what r&d is in UAS and what is the end result of the learning process? 'Good' and 'right' end results are quite often determined by a teacher or working life partner and they are often something that is easy to measure: exam answer, report or some concrete output. What is acceptable outcome and what does co-operation really mean from working life perspective? Is it just an opportunity to get free work force or is it an opportunity to participate in a process which might bring different kind solutions to the problem at hand? Outcomes may also include insightful encounters, social competences and more competent future work force. Developing evaluation practices is a major challenge, which requires deep discussions among all participants.

We have to identify the myth of a 'good' and well performing teacher in ourselves in order to grow as educators. Välijärvi (2006) states, that the future of teaching will be continuous search for oneself and experimenting new things instead of repeating the one and only right model.

It is essential that teachers get resources to develop their own work and have their own competence aims, which guide them to implement the strategies in practice. If we want the transformation of learning to be part of students' everyday life in UAS, teachers themselves have to have the willingness to develop their own competencies. At its best the transformation of teaching and learning can mean that we find new and inspiring opportunities in our own work.

If decisions concerning pedagogical strategies are made only on strategic level, without teachers' commitment to common aims, the transformation is difficult. This means that we have to have courage to discuss work ethics and the basic values that are attached to teaching; How do we as teachers encounter other people? Who owns the 'right' knowledge? Who is allowed to be an expert? How do we understand learning?

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4 New perspective on teaching practice and activities in International school for Social and Business studies

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Abstract

The Bologna Declaration has started with a series of reforms making European Higher Education more compatible and comparable, more competitive and more attractive. Slovenia is one of the member countries that signed the Bologna process in 1999. Since then, the Bologna process has a great impact on Slovenian higher education on different levels. In this paper we would like to focus on a new perspective on teaching practice and activities that takes place in a new private faculty in Celje. The teachers play a vital role in enabling the students to identify and develop their talents and to fulfill their potentials for personal growth and well-being, as well as in helping them to acquire the complex range of knowledge, skills and key competencies needed in their personal, social and professional life. Therefore the ability of teachers is very important to meet and manage the challenges of increasing social and cultural diversity in the classroom. As Europe is moving towards the so-called well-educated society, each society in general needs to be a part of this process. Therefore universities should consider their interaction with the society where they operate, either on local, regional or national level. The faculty wants to encourage their teachers to start with the new perspective on teaching practice and activities which are introduced in the handbook Teachers' guidebook through the study year. The Teachers' guidebook is a handy guide for new teachers and a presentation of the new perspective on teaching practices and activities at the International School for Business and Social Studies. The guidebook informs the teachers

how to apply some new teaching practices and activities, how the school is organized and what the teaching policy at the faculty is.

Bologna process and its changes in HE

Raising the quality and standard of learning is essential if Europe is to become a more competitive and dynamic society and its citizens are to be better able to develop their own skills and competencies and realise their potential as citizens, as members of society, and as economic agents. Hence, preventing and combating unemployment and social exclusion start by increasing the quality of education and training provision, including work-based learning. (Report, 2001, p. 7)

Everyone accepts that education and training systems must adapt to a world of lifelong learning. This requires inclusive and coherent education and training systems, which are attractive both to young people and adults, as well as a strategy which overcomes the traditional barriers between the various parts of formal education and training and non-formal and informal learning. High quality basic education for all, from early childhood onwards, is the essential foundation. However, the change in the demographic structure – the proportion of young people in society has never been smaller – reinforces the importance of encouraging continuing learning in the older age groups, too. (Report, 2001, p. 11)

The [Bologna Declaration](#) has started with a series of reforms that make European Higher Education. Slovenia is one of the member states that signed Bologna process in 1999. Thus, The Bologna process has a great impact on Slovenian higher education on different levels.

In the report Trends IV: “European Universities Implementing Bologna” (Reichert S., Tauch, C., 2005) it is stated: “In a renewed, student-oriented curriculum, HE institutions must foresee the need of the students for more guidelines, counselling and the need for support contributing to their own individual academic path in a more flexible learning environment.”

On the basis of the report Trends IV there was more focus on student’s support and development of student’s incorporation into the process of study renovation in the project Trends V: Universities Shaping the European Higher Education Area. From the beginning of the renovation of the Bologna study programmes within the HE area the students can encounter numerous changes in the fields of the level of education, study programmes, teaching and learning techniques and in the field of a stronger incorporation into an academic sphere. (Crosier, D., Purser, L., Smidt, H., 2007). A help to the students in the form of academic guid-

ing, career centre, student's accommodation, psychological counselling offices plays an important role in respect of competitiveness and the rise of attractiveness of European HE area.

From the report Trends V an increase of support to students in the period of four years can be seen, showing the period from the report Trends III to the report Trends IV. The fields (Picture 1) included in research are: information about study opportunities in other HE institutions (the increase of such information from 56% up to 74%), academic HE support (the increase from 78% up to 85%), learning of foreign languages (increase from 60% up to 85%) and career guidance which was included in this report for the first time shows 66% use in its basis. (Crosier, D., Purser, L., Smidt, H., 2007, p. 48)

How to make learning more attractive

Meeting within The Council of the European Union and the Representatives of the Governments of the Member States (2007, p. 1-4), regarded to the Lisbon European Council conclusions of 23-24 March 2000, which emphasised that investing in people was crucial to Europe's place in the knowledge economy and called upon Member States to remove obstacles to teachers' mobility and consecutively attract high-quality teachers. The Education Council's February 2001 report to the European Council on the concrete future objectives of education and training systems emphasised their function as tutors or guiding learners on their individual pathway to knowledge. The most important objective of the 'Education & Training 2010' work programme - Improving education and training for teachers and trainers is the importance of attracting and retaining well-qualified and motivated people to the teaching profession, identifying the skills that teachers require to meet the changing needs of society, providing support through initial and in-service training, and attracting individuals who have professional experience in other fields. The Council and the Commission of 26 February 2004 was followed by interim report on progress towards the Lisbon objectives in the fields of education and training. It gave priority to the development of common European principles for the competences and qualifications needed by teachers in order to fulfil their changing role in the knowledge society. The interim report of the Council and the Commission of 23 February 2006 emphasised that investing in the training of teachers and trainers as well as training institutions is crucial if education and its training systems are to be improved towards greater efficiency. The Council was followed by the meeting of the Council and the Representatives of the Governments of the Member States (14 November 2006) which stated that the key factors in achieving high quality learning outcomes are moti-

vation, skills and competences of teaching staff and their continuous professional development, as well as the quality of school leadership.

High-quality education and training are powerful determinants of Europe's long-term competitiveness and capacity to create more jobs and growth in line with the Lisbon goals and in conjunction with other relevant policy areas such as economic policy, social policy and research. Equally importantly, teaching provides a service of considerable social relevance as teachers play a vital role in the identification and development process and as well as in the personal growth of every individual. Teachers help them to acquire the complex range of knowledge, skills and key competences that they will need as citizens throughout their personal, social and professional lives. Within the classroom the ability of teachers to meet the challenges of increasing social and cultural diversity is becoming crucial in the development of more equitable education systems, which would provide equal opportunities for all. Considering the above we can state that the education and training of teachers is a crucial element in the modernisation of European education and training systems and Member States should give high priority to sustaining and improving the quality of teacher education within a career-long perspective.

In acquiring key competences for life, students are increasingly expected to develop greater learning autonomy and to take responsibility for their own learning. Furthermore, the learners in any class may come from an increasingly wide range of backgrounds and may have a very broad range of abilities. In order to enable teachers to adapt their teaching methods to the evolving needs of learners, there is a need for them regularly to update existing skills and/or develop new ones. The new demands that the teachers are facing are not only development of new learning environments and approaches to teaching but also high degree of professionalism. Higher autonomy of schools as well as open learning environments demand greater responsibility for the content, organisation and monitoring of the learning process as well as personal career-long professional development. Considering the above there has been a question stated on how to attract new suitably qualified people with experience from other professions into the teaching profession as well as persuade experienced teachers to remain in the profession rather than retiring early or moving to other professions.

Within the framework of their responsibilities the teachers endeavour to ensure a qualification from a higher education institution which strikes a suitable balance between research-based studies and teaching practice as well as possess specialist knowledge of their subjects and the pedagogical skills required. The teachers should have access to effective early career support programmes at

the start of their career and adequate mentoring support throughout their careers. Throughout their careers teachers should be encouraged and supported to review their learning needs and to acquire new knowledge, skills and competence through formal, informal and non-formal learning, including exchanges and placements abroad. It should also be ensured that teachers with leadership functions, in addition to possessing teaching skills and experience, have access to high quality training in school management and leadership. Teachers' initial education and early career support as well as further professional development should be coordinated, coherent, adequately resourced and quality assured. Consideration on the adoption of measures aimed at raising the level of qualifications and the degree of practical experience required for employment as a teacher should be considerably made. Closer links and partnerships between schools and teacher education institutions should be made ensuring that those institutions provide coherent, high quality and relevant teacher education programmes which respond effectively to the evolving needs of schools, teachers and society at large. (Council, 2007)

Changes in education and in society are placing new demands on the teaching profession. For example, as well as imparting basic knowledge, teachers are also increasingly called upon to help young people become fully autonomous learners by acquiring key skills, rather than memorising information; they are asked to develop more collaborative and constructive approaches to learning and expected to be facilitators and classroom managers rather than ex-cathedra trainers. These new roles require education in a range of teaching approaches and styles. Furthermore, classrooms now contain a more heterogeneous mix of young people from different backgrounds and with different levels of ability and disability. They are required to use the opportunities offered by new technologies and to respond to the demand for individualised learning; and they may also have to take on additional decision-taking or managerial tasks consequent upon increased school autonomy. To equip the teaching body with skills and competences for its new roles, it is necessary to have both high-quality initial teacher education and a coherent process of continuous professional development keeping teachers up to date with the skills required in the knowledge based society. As with any other modern profession, teachers also have a responsibility to extend the boundaries of professional knowledge through a commitment to reflective practice, through research, and through a systematic engagement in continuous professional development from the beginning to the end of their careers. Systems of education and training for teachers need to provide the necessary opportunities for this.

In the year 2000 the Council of the European Union announced its ambition to become 'the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion'. To achieve this ambitious goal, it is necessary to invest in the quality of education. Therefore, in 2001 the Council identified concrete future objectives of education and training systems (European Council, 2001).

As part of these objectives, three major goals were emphasised:

- to improve the quality and effectiveness of EU education and training systems;
- to ensure that they are accessible to all; and
- to open up education and training to the wider world.

To realise these goals, ministers of education of EU member states agreed on the detailed work programme Education & Training 2010 with 13 specific objectives (European Council, 2002). Education systems in the member states have to improve in a variety of areas: teacher quality and teacher education; basic skills; integration of Information and Communication Technologies; efficiency of investments; language learning; lifelong guidance; flexibility of the systems to make learning accessible to all, mobility, citizenship education etc. Concerning teachers and teacher training, the work programme identifies four key issues:

1 identifying the skills that teachers and trainers should have, given their changing roles in the knowledge society;

2 providing the conditions which adequately support teachers and trainers as they respond to the challenges of the knowledge society, including through initial and in-service training in the perspective of lifelong learning;

3 securing a sufficient level of entry to the teaching profession, across all subjects and levels, as well as providing for the long-term needs of the profession by making teaching and training even more attractive; and 4 attracting recruits to teaching and training who have professional experience in other fields. (Zgaga 2008, p. 135,136)

Teachers play a crucial role in supporting the learning experience of young people and adult learners. They are key players in how education systems evolve and in the implementation of the reforms which can make the European Union the highest performing knowledge-driven economy in the world by 2010. They recognise that high quality education provides learners with personal fulfilment, better social skills and more diverse employment opportunities. Their profession, which is inspired by values of inclusiveness and the need to nurture the potential

of all learners, has a strong influence on society and plays a vital role in advancing human potential and shaping future generations. Therefore, to achieve its ambitious objective, the European Union views the role of teachers and their life-long learning and career development as key priorities.

Although teachers play a critical role in society, they cannot act alone. Their own high quality education needs to be supported by the institutions where they are employed, within the context of coherent national or regional policies that are appropriately resourced.

THE KEY COMPETENCES

Teaching and education add to the economic and cultural aspects of the knowledge society and should therefore be seen in their societal context. Teachers should be able to:

Work with others: they work in a profession which should be based on the values of social inclusion and nurturing the potential of every learner. They need to have knowledge of human growth and development and demonstrate self-confidence when engaging with others. They need to be able to work with learners as individuals and support them to develop into fully participating and active members of society. They should also be able to work in ways which increase the collective intelligence of learners and co-operate and collaborate with colleagues to enhance their own learning and teaching.

Work with knowledge, technology and information: they need to be able to work with a variety of types of knowledge. Their education and professional development should equip them to access, analyse, validate, reflect on and transmit knowledge, making effective use of technology where this is appropriate. Their pedagogic skills should allow them to build and manage learning environments and retain the intellectual freedom to make choices over the delivery of education. Their confidence in the use of ICT should allow them to integrate it effectively into learning and teaching. They should be able to guide and support learners in the networks in which information can be found and built.

They should have a good understanding of subject knowledge and view learning as a lifelong journey. Their practical and theoretical skills should also allow them to learn from their own experiences and match a wide range of teaching and learning strategies to the needs of learners.

Work with and in society: they contribute to preparing learners to be globally responsible in their role as EU citizens. Teachers should be able to promote mobility and co-operation in Europe, and encourage intercultural respect and under-

standing. They should have an understanding of the balance between respecting and being aware of the diversity of learners' cultures and identifying common values. They also need to understand the factors that create social cohesion and exclusion in society and be aware of the ethical dimensions of the knowledge society. They should be able to work effectively with the local community, and with partners and stakeholders in education – parents, teacher education institutions, and representative groups. Their experience and expertise should also enable them to contribute to systems of quality assurance.

Teachers' work in all these areas should be embedded in a professional continuum of lifelong learning which includes initial teacher education, induction and continuing professional development, as they cannot be expected to possess all the necessary competences on completing their initial teacher education. (European Commotion, 2004, p.2-3)

Practical applications on private HEI in Slovenia

We tried to focus on a new perspective of teaching practice and activities that take place in a new private HEI. This HEI – International School for Social and Business Studies (ISSBS) has started developing their study programmes, curricula and the whole organisation based on Bologna declaration and also on the Education and Training 2010 programme. ISSBS implemented Bologna undergraduate and postgraduate study programmes and therefore variety of new teaching practices and activities.

In the HEI ISSBS in the study year 2007/2008 and at the beginning of the study year 2008/2009 implementation of the so-called 'Introduction into the study' was organised in the first weeks of the study year⁵⁶. During that period various work-

⁵⁶ Academic calendar – study year is consisted of the Introduction to the study and three trimesters. Introduction to the study is part of the educational process mostly for undergraduate students. ISSBS offers three weeks courses (study skills support, Computer Literacy, Personal Efficacy and Professional Texts Writing ...) before first trimester starts. The duration of trimester is eleven weeks (8 weeks lectures, seminars and practice and 3 weeks examination period – in between 1 week counselling and workshops – study methods, speed reading, personal growth...). Two to three courses per trimester are offered. Some of the workshops are conducted in the context of the teaching units Practical training, part in the Lifelong Learning Program). Workshops in Introduction to the study are: *Introduction to study* which provided students with information on the ISSBS, library, study programmes, study process, examination regulations and student organization. *Successful study methods*: Students learned methods and approaches for effective study. *Computer skills 1 and 2*: Word, Excel and PowerPoint. *Freakonomics*: amusing introduction into the field of economics. *Funny business*: amusing introduction into the field of business. *Academic writing*: Instructions for preparing written assignments.

shops for practical training for the students were aiming to introduce the study in this HE and to gain as much useful information as possible and to transfer practical knowledge and skills to the students. All these workshops in the HE are implemented within Practical training and are an integral part of the curriculum for the first and the second study year of the undergraduate study programmes of the first degree. The research was made before the start of the study year to collect information about the students' expectations about the first weeks of the Introduction into the study, about the study in this HE in general and about the students' satisfaction within the first weeks of study's introduction. Self-evaluation of knowing study skills, rules and methods in the field of writing professional articles, papers, and experience with public performance and learning methods were collected, as well. The results of the performance quality of experts/teachers who had carried out practical training were analysed.

The analysis of expectations and satisfaction with the first weeks of Introduction into the study is in this research based on an empirical approach. Before the beginning and after the performance of practical training in the first weeks of Introduction into the study the first-year students of the 3-year study programme of the first degree Business in Modern Society (hereinafter as BMS) and the first-year students of the 3-year study programme of the first degree Economy in Modern Society (hereinafter as EMS) were given two questionnaires. The questionnaire about students' expectations within the first weeks of Introduction into the study was given to the students before the performance of the workshops. The second questionnaire about measuring satisfaction within the first weeks of Introduction into the study was given to the students after the performance of the workshops.

At the end of the previous study year ISSBS made an evaluation (a questionnaire for teachers and a questionnaire for students) of the study process and the evaluation report was the key to start with the new project "teachers' guidebook through the study year". By means of the questionnaire for teachers and questionnaire for students the analysis of teaching methods was made. The evaluation was made for group work, working in pairs, individual work and frontal work.

GROUP WORK

The research has demonstrated that an important factor in student's success is the opportunity for students to work in groups. While many academics would like to include group work (nekaj manjka – kam bi ključili ...npr. v predavanja), there

is often hesitation on the side of the teachers because of bad experiences when groups fell apart and failed to complete the tasks or left the work to one or a few students who felt badly put upon.

There are many advantages of including some group work in the assessment design, but if included, it must be thoughtfully managed. (see Table 1)

Table 1. Group work

ADVANTAGES	DISADVANTAGES	OPPORTUNITIES
psychologically grounded	difficult to organise the work	differentiation and individualisation
direct social relationships, interaction	students' ability to work in teams	assuring and encouraging activity
sense of responsibility	room suitability	
leadership	sidetracking when searching for solutions	
unique individualisation	time-consuming	

WORKING IN PAIRS

Working in pairs means working together. It does *not* working (preglej – tu nekaj ni ok - ali it does 'net' working, ali it does not work?) separately and combining the results of the separate work into one product.

At any moment, one person is the *driver* and the other one is the *navigator*. Furthermore, partners may switch roles while they work together on a task, though they don't have to.

Some pairs designate drivers for entire tasks. Sometimes they just switch their roles during the tasks. It depends on the emphasis and the organisation of the surrounding team.

Observation, experimentation, learning and revising are most efficient when done in pairs. The criteria for assigning students into pairs are identical to the ones for assigning them into groups. (see Table 2)

Table 2. Working in pairs

ADVANTAGES	DISADVANTAGES	OPPORTUNITIES
direct communication	high number of pairs in a group	
cooperation	negative individual differences between students	inclusion of passive students
increased motivation	restricted learning sources	
direct mutual control	risk of superiority/conflicts	

INDIVIDUAL WORK

Individual work is work of each student. There is an additional type of *individual* tasks (every student has their own task). (see Table 3)

Table 3. Individual work

ADVANTAGES	DISADVANTAGES	OPPORTUNITIES
development of abilities, skills and habits for independent work	dependent on the level of independence	direct introduction of students to independent work
self-initiative, creativity	supporting individualism	individualisation of education
development and enforcement of individual interests	extensive tasks preparation	monitoring the ways of working
possible to adapt the level of difficulty	checking results is time-consuming	

FRONTAL WORK

Most common teaching methods are still a sort of frontal work which has lots of disadvantages and advantages. (see Table 4)

Table 4. Frontal work

ADVANTAGES	DISADVANTAGES	OPPORTUNITIES
economical, fast communication of information	dominated by the relationship teacher – student	combination of (verbal) teaching methods
keeping and checking attention	neglected relationship student – group	use of various audio-visual media
exchange of experience	neglected student's individual capabilities (creativity ...)	direct inclusion of students
everybody starts and ends at the same time	hindered development of independence	asking questions, expressing opinions ...
teacher »leads« students to the goal	teacher's activity is dominant	group checking of achievements and group analysis
		joining different departments

Higher education teachers should combine different teaching methods which will increase the dynamics of the education process.

The analysis showed that ISSBS encourages their teachers to start with the new perspective on teaching practice and activities which are introduced in handbook Teachers' guidebook through the study year. The teachers' guidebook is a hand-ful guide for the new coming teachers and for presentation of a new perspective on teaching practice and activities in the International school for Business and Social studies.

The guidebook informs teachers with some new teaching practice and activities and with school organisational and teaching policy as follows:

1) Teaching methods and practices and activities:

- Project learning (problem-oriented tutorials) is an important component mostly for postgraduate study. This project learning is organised according to the module chosen by a group of students (up to 6 students) and it has to be problem-based with conclusions and directions for the future.
- Problem-based learning. Students are very interested in problem-based learning workshops where teachers have great opportunity to help students to develop new skills and competences. We can also say competence-based learning. The learning outcomes include not only knowledge-related aspects, but also competencies, skills and attitudes related to the study programme.

- Collaboration with the wider community. The faculty attracts new people – suitably qualified people with experience from other professions (guests from practice).

The faculty also organises workshop activities for teachers with a wide range of new didactical methods.

2) Tutors (teachers and peers)

The student union of faculty started with the idea of constituting the tutoring system. They are trying to provide better integration of recruits into the studies and life at school, to assist and to solve students' problems with their study and to provide some additional knowledge through various organised workshops and other projects.

The main goals of the above mentioned tutoring system are:

- greater cooperation between the students and the faculty,
- increase of individual assistance,
- more opportunities for immediate response and a deeper insight into a problem,
- additional motivation for studies and
- systematic consolidation of confidence.

Academic staff also plays the main role in tutoring system. Their involvement will help to reduce the "virtual wall" between the students and the teachers in higher education. The faculty is also trying to strengthen its personal approach to the students and to improve the quality of education. Because of a small number of tutors (students) in the first year of implementation, particularly more desirable ones to help are university teachers and staff as well as some other professional colleagues. A teacher tutor directs students and advises them with the choice of effective methods of study materials. He helps them to solve the problems of study and encourages them for acquisition of additional knowledge. A teacher gives them advice on possible continuation of study at home and abroad and the teacher provides them with information on possible career paths after finishing the study.

3) Evaluation and assessment. Evaluation and assessment are divided into several sets of student assessment obligations. This ongoing work is encouraging and motivating students to study. The Guidebook also offers a teacher a great variety of assessment criteria and several sets of student assessment obligations (writings, public performance, seminar task ...).

4) The faculty is trying to create a safe and attractive school environment which is based on mutual respect and cooperation.

5) The teachers have to participate in development process of the school, in developing new knowledge and being innovative through engagement in reflective practice and research.

Numerous social, cultural, economic and technological changes in society place new demands and hasten the need for the development of more competence-centred approaches to teaching, together with a greater emphasis on learning outcomes. In order to enable the teachers to adapt their teaching methods to the evolving needs of learners, there is a need for them to update existing skills regularly and/or to develop the new ones. This is also a part of Education and Training 2010 programme.

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5 Students independent work in higher non-university education

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Abstract

One of the most important goals of the modern study process is to prepare students to work creatively independently. The paper considers a particularly important problem of independent studies of different subjects while developing students independent work skills. The purpose of this survey is to develop methodical trends for improvement of students' independent work. The survey is based on questioning of the students in the study areas of Mathematics, Informatics, Engineering, Technology and Business Studies and Management Sciences. In the survey it was taken into account that students' independent work skills are formed depending on many factors: students' expectations, variety of study methods, management peculiarities of independent work, even the character features of the student. The paper presents methodical trends for improvement of students' independent work based on the survey results.

The European Parliament and the Council of the EU have declared the year 2009 the European Year of Creativity and Innovation. The overall objective of the Year is to support the efforts of the member states to promote creativity, through lifelong learning, as a driver for innovation and as a key factor for the development of personal, occupational, entrepreneurial and social competencies and the well-being of all individuals in society. That is related to one of the most important goals of the modern study process, i.e. to prepare students for independent creative work. Independent studies of different subjects play a particularly important role in the study process while developing students independent work skills.

The purpose of this research is to develop methodical trends for improvement of students' independent work. The methods of didactical literature analysis and data collection employed in the research intended to gain insights into both the methodology that lies behind students' independent work as well as students' perception of the importance of independent work for the development of their skills and competencies. A questionnaire was used as the instrument for data collection.

The survey is based on questioning of Alytus College students in the study areas of Mathematics, Informatics, Engineering, Technology and Business Studies and Management Sciences. Non random sampling method was used for sizing up the number of the respondents. According to the data of October 2008 (2008), 1871 student studied at Alytus College. Such number refers to small size unit. Consequently the following formula was chosen for sizing-up the sample:

$$n = \frac{p(1-p)}{\left(\frac{e}{z}\right)^2 + \frac{p(1-p)}{N}} \quad (1)$$

where:

n – size of the needed sample;

z – units of the standard error size at normal distribution by desirable reliability degree (as reliability degree is 95%, z=1,96, as reliability degree is 99%, oz=2.58);

e – sampling error or ultimate disparity in sample and unit ratios;

p – unit ratios corresponding to the characteristics that interest the researcher;

N – unit size.

95 % reliability, 5 % sampling error and 50% unit ratio were chosen for sizing-up the sample. It was calculated that 319 respondents had to be questioned, that ensured statistic data reliability. The questionnaire consisted of three types of questions: closed multiple choice questions with selection possible for questions related to major types of study methods (information, operational, creative), those related to management and assessment of independent work and psychological aspects of learning; open questions so that students could comment on the given descriptions and assessment principles of independent work; open questions on the improvement of the quality of independent work.

The survey shows that in general researchers suggest that independent work in the study process in a broad sense is an objective, a work form and eventually a study method. The results of the questioning show that the students often perceive independent study as developing the skills of applying theoretic knowledge in practice and training how to solve future problems and make decisions. Since independent work is a concurrent of the study process, it is important to go deep into the methodological background.

Modern education theory is based on didactic principles, i.e., according to V.M.Kroul (2001) [57], teaching/learning theory principles, defining the content, methodology, forms and methods. Hence, these are major study management ideas and norms, which regulate the study content, methods and organization. Proper use of didactic principles is the basis of teachers' activities in projecting the content and structure of the subject, which would foster students' creative activities, interest them and support them in attaining good academic achievements. Furthermore, didactic principles determine not only the choice of methods and means, but also the use of education means. One can propose that didactic principles are the most general requirements regulating the study process.

The principles of education scientific character, systematic learning, accessibility of learning, aware and active learning, knowledge consolidation, use of learning means, reflexive learning, creativity fostering and developing learning dominate in modern didactics. Selection of the content, methods and management of independent work itself, describing the character of students and teachers interaction, should be based on them.

The principle of education scientific character requires the study content to be designed to reflect the situation of modern science situation and to provide the students or enable them to find real and practically tried and tested data. It is essential to understand that science development determines scientific knowledge increase therefore it is impossible to convey all scientific knowledge, the main thing is to develop the ability of learning in the changing environment. And this depends on the study goals, specific character of the subject, student age, the level of preparation, etc. Recognizing the sense of student constructed knowledge, the principle of education scientific character at independent work is related to the analysis of problem-based situations. In this case teacher's functions involve presentation of methodical references, rules, instructions and descrip-

¹. Alytaus kolegijos 2008 m. ataskaita, ŠV – 01 metinė, 31.10.2008.

tions for independent work assignments and tutoring. The results of the questioning show (figure 1) that the above mentioned teacher's function is assessed by students quite favourably though they would appreciate more support.

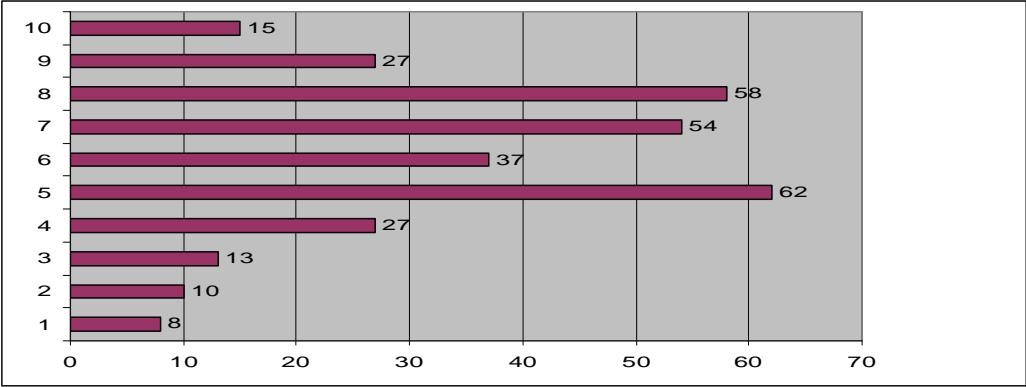


Figure 1. Assessment of teachers' tutoring work

The second aspect of the principle of education scientific character is defined by the necessity to refer to scientific knowledge about the student. Realisation of the principle of education scientific character includes the learner's psychic processes consisting of cognition processes (senses, perception, thinking, attention, memory, imagination) or mind, feelings and will. Hence it is impossible to tackle the problem of studies without knowing students' psychic processes. Contrary to the exponents of traditional didactics who first of all consider learners' intellectual properties, the exponents of modern didactics emphasise entirety and they state that not only mind is needed for studying, feelings and will are also important. The results of the questionnaire of Alytus College students show that they also acknowledge the importance of entirety for their independent work (figure 2).

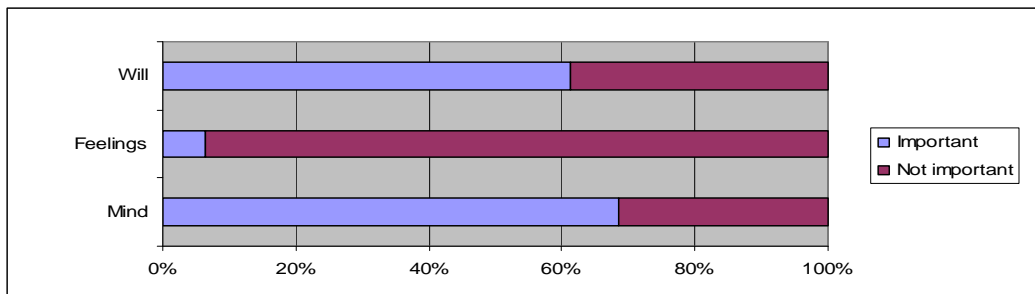


Figure 2. Assessment of the influence of students' psychological factors on independent work

Consequently studying requires not only thinking abilities but also emotional efforts striving to orient in rapidly changing environment. Therefore studying is more efficient if the teacher understands the student as entirety. In order to influence the processes of students' cognition and metacognition it is important to assess not only students' emotions and motivation but also their outlook on life (figure 3).

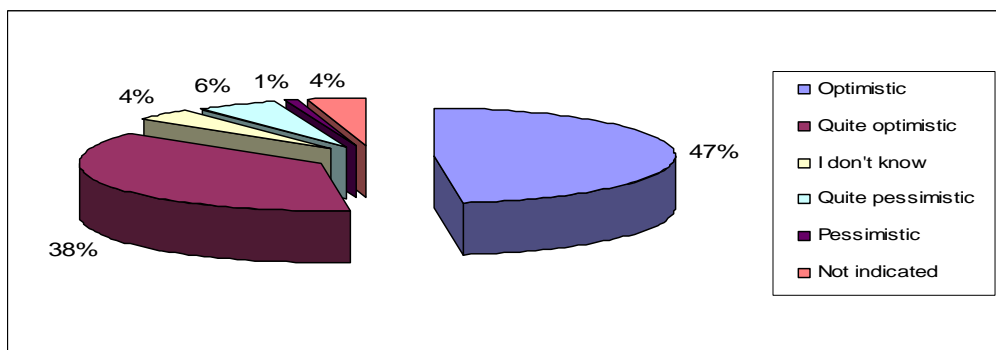


Figure 3. Assessment of students' outlook on life

Accordingly, studying is related to a particular individual and it is an exceptionally individual process. It includes not only acquisition of new knowledge and outlook on life but also self-perception. The analysis of target literature shows that students learning styles mainly depend on the constructs including the following: active, reflective, sensing, intuitive, visual, verbal, sequential and global. Active learners prefer to learn by doing while reflective learners prefer to learn

by thinking. Visual learners prefer to learn through images and verbal learners prefer to learn by listening or reading. Learners who prefer to apply learning and who are comfortable learning facts are sensors. Intuitive learners prefer learning abstract ideas and respond better to less structure in learning settings. Sequential learners prefer clearly defined steps while global learners have a preference for making their own connections [58]. During the latest decades the „trait” theories of individualised learning have been widely spread. These theories postulate that once we identify a learner's trait, then we can change instruction in a way that matches the trait and subsequently improve the learner's performance. The best advice given for teachers by the supporters of the theory is to use a variety of teaching strategies and hope that teachers can reach some of the learners some of the time. In contrast C. Dillon, B. Greene and R. Mansell (2005) [5]

^{2.} Barkauskaitė M., Gudžinskienė V. 2007. Inovatyvių šiuolaikinių studijų technologijų kriterijai ir aprašas. Mokymo metodinė medžiaga. Vilnius: Petro ofsetas, 123.

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^{5.} Dillon C., Greene B., Mansell R. Assessing approaches to learning in independent learning environments in higher education <http://www.formatex.org/micte> (8.1.2009)

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^{10.} Želvys R. Švietimo organizacijų vadyba. 2003. Vilnius: VU leidykla.

suggest a shift in focus from learner “traits” to learner “states”. State theory assumes that the factors most important to learning are malleable, changing as a learner progresses through a single course or moves from course to course. Using this assumption, the teacher’s task is to help the student adjust to different learning situations. In other words teachers should try to change the students learning approach rather than changing the instruction to suit each individual.

The third aspect of the principle of education scientific character states that, according to the approach of constructionism, knowledge is not definitive, invariable or not possible to convey. Sooner awareness is partly personal (subjective) and it is constructed by the learner referring to his/her experience. That is influenced by interaction of previous knowledge and new learning experience. Accordingly students should be offered independent practical training work using different objective information resources. Practically such kind of independent work can be identified as problem-based learning where critical and creative thinking are involved. Implementation of the principle of education scientific character allows developing learner’s cognitive powers, liberating his/her intellect and the study material is mastered much faster. This principle, based on the idea of regular learning, strives to develop students’ skill of independent work using modern study methods. The study methods often mentioned in educational resources were systemised into three major groups, generalised and presented in the figures 4 - 6. The results of the questionnaire are also reflected here showing the study methods which are most often applied in Alytus College study process.

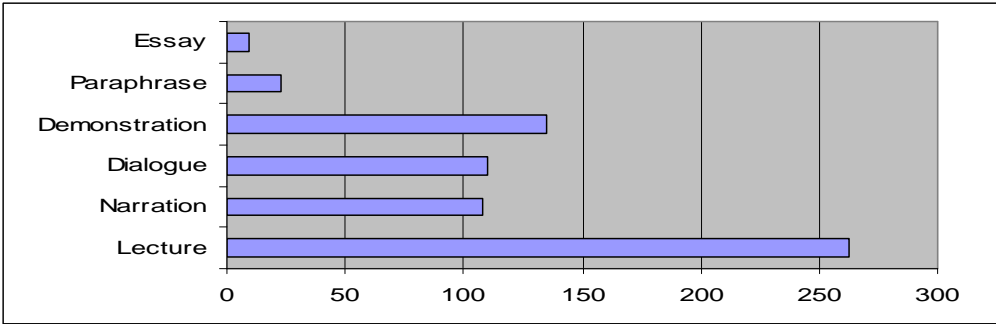


Figure 4. Assessment of information learning methods in the study process

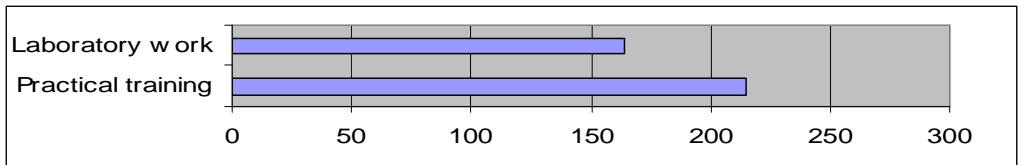


Figure 5. Assessment of operational learning methods in the study process

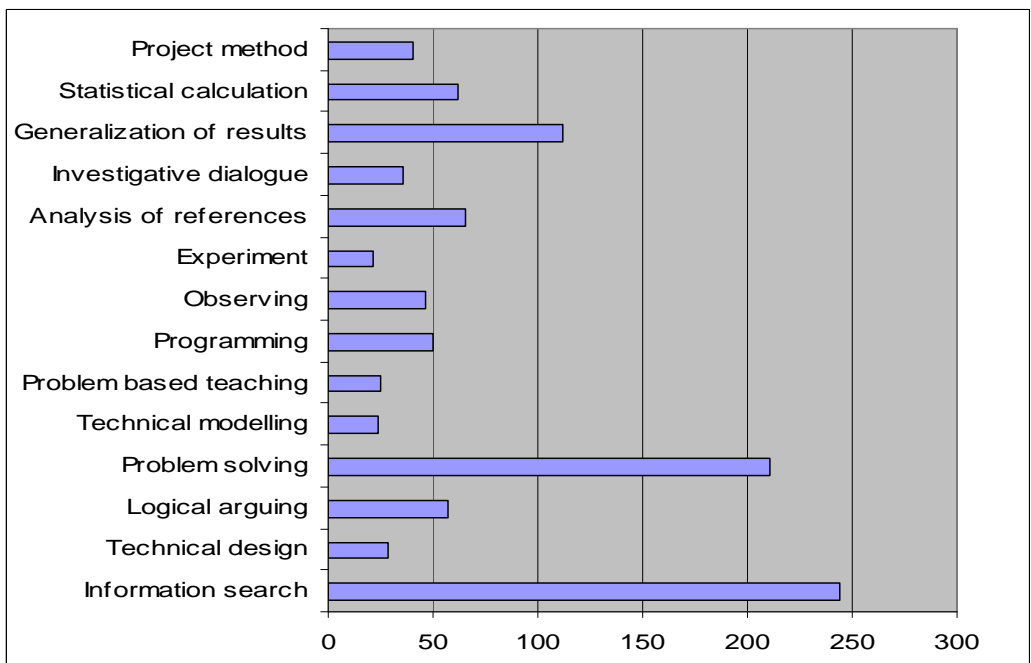


Figure 6. Assessment of creative learning methods in the study process

Independent work methods most often mentioned in educational resources are presented in figure 7 which shows that students use a wide range of modern learning and independent work methods and they like information search, theory (lecture) analysis, practical training, problem solving, demonstration and laboratory work most of all. It should be noted that narration is one of the rarely mentioned among the methods of independent work preferred by students.

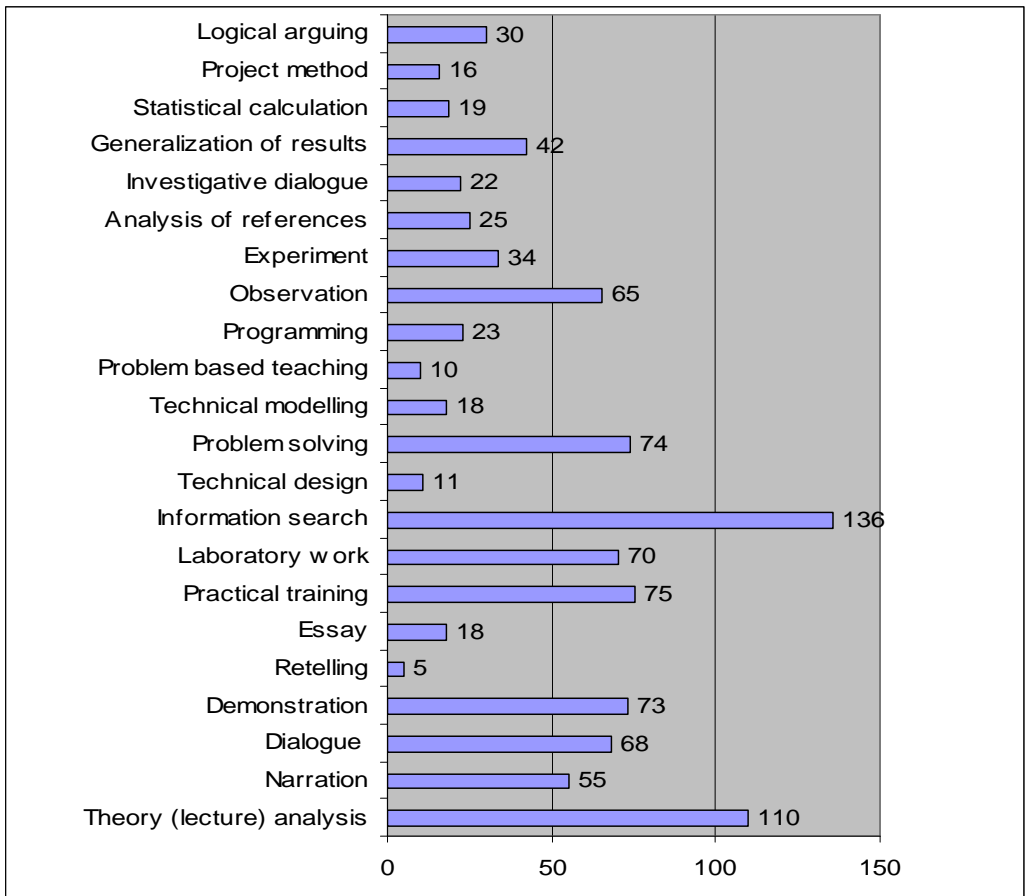


Figure 7. Independent work methods by students' preference

Suggestion that learning must be systematic and consistent was formulated already in the XVII century. The principle of systematic learning requires conveying knowledge methodically, based on interdisciplinary links, demanding systematic independent students work. Talking of the application of this principle at students independent work one should not forget information accessibility and its transfer into new circumstances. Previous knowledge, competencies and skills must be based on acquisition of new knowledge. This way the system of student's knowledge, competencies and skills can be formed. Assessment methods are particularly important for implementation of this principle since teachers and

students can self-assess their knowledge and skills in order to effectively continue studies.

According to N.M.Grenstad (1999) the principle of accessibility of learning fosters creative skills and competences of learners, independent and critical thinking. Therefore it is essential for teachers to think over how to attain retaining of the attention stimulated at the beginning of the topic. It is recommended to encourage students to use libraries, learning technologies, etc. while organizing students' independent work and striving to deepen understanding of the subject and develop students' skills of applying knowledge in practical situations. The task of the teacher in implementing this principle is to stimulate students to get interested in the subject and learning to learn. P. Ramsden (2000) indicates that as a person gets interested in something, he/she becomes involved in that, even if it is a hard work.

Aware and active learning principle is related to strong internal learner's motivation and his/her willpower features. Therefore the proportion of motivation and successful activities are reflected in the learner's feelings, which influence learning because sensual comfort is essential for successful active learning. Aware knowledge is based on the student's active learning, thus the teacher acts as the organizer and mentor rather than the informer. Consequently independent work is an efficient means for implementation of this principle. Implementation of this principle at independent work refuses ready-made knowledge transfer, mechanical learning and authoritarian communication style; it requires developing logic and critical thinking.

Knowledge consolidation principle means that students should acquire not only appropriate fact knowledge but they should also feel that the study material is related to something very important for their future professional activities and career.

The principle of the use of learning means is one of the oldest and most important principles of didactics, the use of which fosters active thinking, defines the goals of cognition, designs the plan of observation and summarises the achieved results. Hence, it is very important to appropriately choose the study means to be used at independent work. The results of the questioning confirm that the questioned students in all study areas actively use the study materials prepared by the teachers although they emphasise that they still lack such kind of study materials, especially those with the information presented in one study resource or manual. Availability of such resources would significantly facilitate the study process.

Reflexive learning principle is based on the provision that reflection is the prerequisite for exchange of attitudes and activities. Reflection fosters not only the knowledge development but also self-knowledge and formation of one's knowledge structure highlighting its weaknesses. Implementation of this principle requires application of modern study methods which develop critical thinking. The teacher, applying the reflexive learning principle at independent work, should encourage the students to tell their opinion or even their state, e.g. what he/she feels having received the independent work assignment, how he/she would evaluate his/her work, etc. Such kind of reflections enables students of joining facts, findings and ideas into one concerted network.

Creativity fostering principle acknowledges inborn human self-expression need is looking for the ways of fostering personality creativity. Creativity is conceptualized as capability to participate in the process of creation, observe and perceive, discover something new and understand one's experience. Fostering of creative thinking is closely related to the problem-based learning and students independence which is enormously developed in the process of independent work.

Today the principle of developing learning is considered to be essential. It is based on the proposition about the developing function of the study process aiming at developing learner's cognitive powers and fostering learning competences which can be divided into two groups of abilities: independent learning, search and application of information. Ability to learn independently is the prerequisite for self-education and the basis of life long learning.

In summary it must be stated that modern principles of didactics are directly related to each other as a dynamic system forming the background for the development of students' capabilities and competencies. Consequently, implementing the goals, choosing the content, methods, means and resources of independent work as well as creating favourable study environment it is purposeful to focus on the whole system of the didactic principles but not on separate ones.

CONCLUSIONS

1. Independent work in the study process is an objective, a work form and finally a study method. The results of the questioning show that the students often perceive independent study as developing the skills of applying theoretic knowledge in practice and training how to solve future problems and make decisions.
2. Independent work is a part and parcel of the study process therefore it is important to go deep into the following didactic principles of its methodological

background: education scientific character, systematic learning, accessibility of learning, aware and active learning, knowledge consolidation, use of learning means, reflexive learning, creativity fostering and developing learning. The above mentioned principles should be followed selecting the content, methods and management of independent work itself, describing the character of students and teachers interaction.

3. Three forms of the principle of education scientific character in independent work can be singled out. Firstly, recognizing the sense of student constructed knowledge, the principle of education scientific character in independent work involves the analysis of problem-based situations where the teacher acts as a tutor. Teacher's tutorial function is assessed by Alytus College students quite favourably though they would appreciate more support. Secondly, the process of learning is impossible without awareness of the students' psychic processes. The results of the questioning of Alytus College students show that they also acknowledge the importance of entirety for their independent work. Thirdly, knowledge can be treated as open-ended, versatile or not conveyable and it is constructed by the learner referring to his/her experience. Thus it allows developing learner's cognitive powers, liberating his/her intellect and faster mastering the study material. This principle, following the idea of permanent learning, strives to develop students' skill of independent work using modern study methods.

4. We share C. Dillon, B. Greene and R. Mansell suggestion to shift focus on the learner state assumption as the teacher's task is to help the student adjust to different learning situations. In other words teachers should try to change the students learning approach rather than changing the instruction to suit each individual.

5. Summarizing, it must be stated that modern didactic principles are closely interrelated as a dynamic system which is the background for developing students' skills and competences. Consequently, implementing the goals, choosing the content, methods, means and resources of independent work as well as creating favourable study environment it is purposeful to focus on the whole system of the didactic principles but not on separate ones.

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6 Integration of Inspiration Software and Library Supported Skills within Blended Learning in Undergraduate Teaching

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Abstract

This paper reflects on a continuing project to support student achievement and develop employability skills through technology-supported, flexible-learning practices, at differing levels of undergraduate study. The project has two strands of development. The first strand introduced the use of the Inspiration software, to help students develop their abilities in concept mapping and assignment planning. This was expected to develop more systematic, flexible and critical thinking by the students. The second strand of development integrated library support with module activities at a level and direction appropriate to the student, to provide a structured 'on tap' service. The aim is to enhance student perception and use of library support services and develop student information management skills.

Introduction: Developing Effective Learning

Effective learners are self-regulating students who take responsibility for their learning. Among their qualities, they can use externally referenced criteria to set their own goals, plan their activities according to the resources available and monitor their own progress, adapting their activities their cognitive and metacognitive strategies as appropriate (Nicol and Macfarlane-Dick, 2006; Heikkilää and Lonkka, 2006).

Flexible Learning

Student-centred learning has been identified as making a significant contribution to more effective learning (Smith, 2003). Flexible learning can contribute to student-centred learning, as it increases student discretion over various aspects of learning (Greenway, Herat, and Narayanaswamy, 2000). Part of the process of flexible learning is that it requires a fundamental change in outlook on the part of teachers and students, compared with more traditional forms of teaching (Minaian-Batmanian, 2002).

The traditional lecture-based teaching is a transmissive model of education, where the teacher transmits knowledge to the student (Graham, 2004), training students in the culture of the discipline or vocational area.

Flexible learning, however, compels students to accept a fuller responsibility for developing their own learning. Students must be active in developing their learning, rather than being trapped on tracks laid down by their teachers. Similarly, teachers need to help students in making their choices rather than determining the routes students must go through. Flexible learning, by its nature, uses modern information technology to develop more by students. This goes beyond merely adopting technology to repackage existing material or allow students more discretion over time and place in their learning. Implicitly, then, as technological possibilities expand, teaching must continually explore the new possibilities provided. Educators must search for new opportunities not just to encourage greater responsibility and self-direction on the student, but also to provide students with greater capability for exercising judgement and to remove obstacles that impede the development of independent, strategic thinking.

The implementation of flexible learning approaches is an ongoing process and involves continuing adjustment over time. Thus, the authors' programme for flexible learning has been moving in incremental stages with small scale testing

of ideas before moving forward, taking into account the cultural and practical constraints of the broader learning environment.

Blended teaching

Blended learning can be defined as combines computer-based with face-to-face learning (Graham, 2004). It can be viewed as macro-development in teaching as it fundamentally re-orientes the whole teaching environment. The authors have adopted a blended teaching approach to further enhance the development of flexible learning in undergraduate and postgraduate teaching. However, the authors have continued the social imperative to explore new, technologically-based, flexible-learning projects to support student achievement and develop employability skills. These developments have taken a variety of forms across several modules (units of study) at differing levels of undergraduate and graduate study, in both coursework-assessed and exam-assessed modules.

In implementing this approach, tutors match their practices to learner expectations and needs. They scaffold student engagement with the subject matter, structuring appropriate challenges according to the tasks and the existing level of learning (Wood and Wood, 1996) and developing skills in information management and critical thinking.

The Project

This paper focuses on a current, specific, project relating to two strands of development. The important first strand is the integration of the proprietary *Inspiration* visual learning software to support and develop graduate-level skills. The project introduced the Inspiration software, to help students develop their abilities in concept mapping and assignment planning. The aim was to integrate Inspiration fully into module activities at all levels, so that students would demonstrate the use of the model in developing and presenting work and develop more systematic, flexible and critical thinking. This represented a significant innovation within the university.

The second strand is the integration of library support with module activities at a level and direction appropriate to the student to provide a structured 'on tap' service by the library. The aim was to enhance student perception and active use of library services in order to develop student skills in information management. This is currently being implemented in different modules at different levels. This innovative linkage with library staff also represented a major innovation in the university.

These two developments appeared were among the natural next steps in a continuing programme of developing flexible learning within the university. They were chosen and their implementation designed to tackle specific problems that were hindering students from benefiting from the opportunities presented by flexible learning. They also exploited the opportunities presented by the expanding technological capabilities within the university.

The two elements of the project may appear quite different conceptually and in implementation, but they are key elements in re-orienting student development. They were specifically chosen to deal with two sets of recurring problems that have been identified: problems in ordering knowledge and thinking and problems in the academic connection with the students' vocational area. Where possible, they have been presented to the students as complementary developments. Together they represent strategic partners in an educational service to help students develop academic and employability skills.

Integrating Inspiration software into student learning

Ordering Knowledge and Thinking

Mind mapping software has been introduced specifically to develop three areas where students appear to have significant difficulties: creativity, a sense of relative importance of information and an evaluative framework for real world events. Remedying these deficiencies would enable students to benefit more from the opportunities afforded by flexible learning. The software was considered to have a role in tackling these three problems areas. It was hoped that getting students to represent their knowledge visually would help them focus on essential issues and linkages, make for better interaction and encourage independent thinking.

Developing creativity

A major problem is that many students lack originality in their thinking, in that they lack the ability or willingness to propose and support their own ideas. They have considerable difficulty in looking at a problem from different angles or making connections between ideas to reformulate a problem. Too often they will simply reiterate what they have read or been told by someone else without really analysing what they have been told. This is largely the product of the transmissive culture pervading much of education. Techniques such as mind-mapping

help to reprogramme their way of thinking and stimulate a more creative approach.

Developing a sense of relative importance of information

Students often lack relativity in description and analysis of problems or situations. They tend to resort to trivial exemplification, using easy-to-acquire material that may be specific to a particular case without appraising its general value. While doing presentations is a standard student activity, the widespread use of PowerPoint encourages information dumping and discourages critical selection of material. PowerPoint slides can be easily expanded and, in their relatively unskilled hands, they can prevent the average student from seeing the wood for the trees and cloud the exercise of critical reasoning. Mind-mapping effectively forces students to more rigorously select material and arrange it with logical connection.

Developing an evaluative framework

Students lack criticality in their analysis of situations, because they cannot apply their evaluative framework effectively to real examples. The selective processes in constructing mind maps improves student analysis of situations because it encourages students to focus on a small number of key issues and their logical connections and consequences

Mind Mapping

Mind mapping provides for the visual representation of knowledge. In effect, it can create a picture from words and allows the viewer to focus on essential issues and ideas. It can serve a stimulus to creative thinking and new idea generation when words are used in a fairly open format as in the style of a Buzan-type mind map. Alternatively, when used in ways similar to Novak-Cañas concept map (Novak and Cañas, 2008) it can progress independent thinking and analysis by focussing on essential issues and linkages.

The authors had used similar techniques, variously described as spidergrams or mind maps, with students, particularly in one-to-one or small group project work. The challenge was to introduce and integrate similar ideas as an essential element of flexible learning using appropriate software. Mind-mapping software was available, sometime freely from the internet, but students would not have been able to access it on-campus. When the opportunity arose to incorporate a mind-mapping program into formal teaching, a strategy was devised to implement in a systematic and progressive way.

Inspiration visual learning software

The Inspiration software was chosen because the authors' institution held a site licence for the software and was loaded on all computers for student use in the library and computer labs, making it accessible to all students. However, other proprietary software provides fairly similar facilities, so that the experiences noted here have fairly general application.

The university's Learning Support Services had previously acquired the software before the project, in order to use it with dyslexic students. They had been using the software with students to help them plan activities from general life planning to essay planning. It is interesting to note that a brief Google search indicated that this was also the case in several other UK universities. The use in general teaching, however, represented a new departure within the university.

The inspiration software was originally developed for school situations but is sophisticated enough to provide for higher education and business uses. The fact that learning support services had been using the software gave the authors greater confidence in its student-friendly nature. Learning Support Services were also, at the time, re-evaluating the software against other products on the market, but there were no signs that the university was intending to switch another product. This provided greater stability in planning, as the project aimed to integrate the software fully into module activities at all levels over a two-year period, pilot-testing in different modules each semester. In fact, the pilot introductions were so successful, that its implementation has been accelerated.

Main features of the Inspiration software

The full features of the software with a 30-day trial download are available at <http://www.inspiration.com/>

Like similar mind mapping, Inspiration starts with a central core term or concept, or an image and further links and ideas can then be made around it. It can be used in two basic forms: map view and diagram view. The map view follows the style advocated by Buzan [Figure 1], with curvilinear connections, while the diagrammatic view approximates the concept-mapping approach of the Novak-Cañas concept map [Figure 2]. Users can switch between extended and truncated views of each map or diagram using a simple toggle function. The student has to choose which approach to use, as they are not interchangeable. However, both views can be translated into a linear outline view that students can use as the basis for writing an essay or report.

There are several features available that make software student-friendly: the use of different colours, pictures and hyperlinks to the Internet. The mind maps can be exported into word documents, as web pages or a picture files for downloading into PowerPoint presentations, thus giving students a considerable flexibility of output. There is also a memo function, which allows extended written information to be attached to various concepts.

Implementation: 2008-9, Semester 1

The software was introduced into three modules of the levels BA Retail Marketing Management degree and the two-year Higher National Diploma (HND) in Consumer Marketing (co-taught with the BA):

- Level 1 Retail Operations – coursework assessed
- Level 2 Managing Retail Development – coursework assessed
- Level 3 Comparative Retail Studies - assessed by exam

All modules had a twelve-week teaching period plus an assessment period.

Introducing Inspiration

The level 2 and 3 students were introduced to Inspiration through a one-hour hands-on session in week 2 with a 40-minute follow up session the following week that explored further features of the software. The sessions were led by an experienced teacher from the library service, who introduced them to the diagrammatic method. The students subsequently used the diagrammatic method throughout the semester. Students were introduced to the Buzan-style mind map feature only in the following semester, if they took other modules taught by the authors.

In order to support this approach, the authors reformatted their lecture-style and discussion sessions in the following way:

- Before the introduction of Inspiration, PowerPoint only was used
- As Inspiration was introduced, Inspiration diagrams were exported as GIF files to PowerPoint
- After a few weeks, Inspiration-based presentations only were used. Occasionally, supplementary Inspiration-in-PowerPoint presentations were made available on the university Virtual Learning Environment [(VLE) - called X-stream – Leeds Met's version of the Blackboard software]. This was done so that students may view the material off-campus.

These developments were reinforced through the assessment methods.

For the Level 3 module, the exam was developed from student-led seminars. Students were encouraged to use Inspiration, either directly or in PowerPoint. All students were permitted to bring prepared mind maps into the exam and a bibliography, but no other notes. The better students were fully engaged with the process and achieved very good results. Weaker or more resistant students avoided or minimised the use of Inspiration in the seminars and brought shallow maps to the exam, with mere dumping of notes into the concept boxes, with unproductive results. The average performance (by grade) was significantly better than the previous years

For the Level 2, students had a portfolio of assessments. This included completion of a compulsory first workbook plus a further two from a choice of six. The workbooks were available as Word documents on X-stream. Students downloaded them, completed them and submitted them online. Each workbook included four assessed activities around the theme of the workbook plus a fifth activity concerning a relevant current issue of their choosing. For this fifth activity, they had to provide a mind map of their analysis. They could, if preferred, submit the mind map as a separate file with their workbook. In addition students had to make a (group) live presentation, two presentation critiques and a module critique. In making their presentation, the students had to incorporate Inspiration mind maps or use Inspiration-in-PowerPoint presentations, with supplementary Power Point if required. The results ranged from Inspiration only through Inspiration-in-PowerPoint to complete avoidance (in one out of thirteen cases). The quality of the presentations, based on content, varied closely with the extent to which Inspiration was used and the depth of the mind maps constructed.

For the Level 1 module, a decision whether to introduce mind maps in this module or leave it till the following semester was not made until after the experiences of the other students. The fairly positive reception given by the more advanced students led to Inspiration being introduced in week 3. The students had a similar portfolio of assessment, except that workbook had more, shorter activities and students were not required to use a mind map in any of the workbook activities. They did have to use mind mapping in their presentations, though. The results were very similar to those for the second year students in terms of mind map usage

Preliminary Evaluation

Interim evaluation has been based the following:

- the ease of use for students
- the extent to which students used mind maps;
- the levels of analysis used and comments attached.

Level 3 and Level 2 students found the software easy to use, and within two sessions were to develop mind maps to an appropriate degree. Level 1 students were more hesitant, though this may relate to the general difficulties in adjusting to a university environment.

One measure of use was the depth to which students used the mind map. A simple division was drawn between students who went to two or more levels of analysis over 80% or more of their diagrams and those students did not achieve this level of analysis. For the level 3 students, over 60% used two or more levels of analysis. Students who went to only one level of analysis had many arrows from the central idea and used many points in the boxes. This could be taken to indicate an unsophisticated approach to the topic. These students generally did not perform as well as students with better formed maps

There was some correlation between better performance and levels of sophistication in the use of the mind maps at level 2 and to a lesser extent at level 1. It is too early to explain the relationship, though it could reflect the more self-regulating approach of the better students and their confidence in trying the more visual learning style presented in mind mapping. Students' average performance, however, has improved in areas such as presentations where the mind maps have been required. This represents a good start to build on. The intention is further test the use of Inspiration in the second semester so that it will be completely integrated in the next academic year.

Developing library skills

The second strand of development aimed to increase students engagement with scholarly and industry research outputs, which would then feed back into module development and direction. This part of the project was designed to encourage students to take a more active part in using the library services, including the study skills support offered, and in developing their own information management skills. It integrated library support with module activities at a level and direction appropriate to the student, to provide a structured 'on tap' service involving the close participation of library staff at certain periods within the module.

Linking study skills with the vocational area

This part of the project tackled three problems students have in linking their study skills with their vocational area. The approach is transferable across different areas of study.

Developing broader intellectual perspective

Many students lacked the ability to link their ideas within a broader intellectual framework, so that particular events or situations could not be seen as part of a general trend or pattern. One step to remedying this would be to stimulate students to engage with a wider range of material.

Developing intellectual engagement with industry events

Too often students wait to be told what is happening outside the textbook. They depend too much on the tutor telling them rather than finding out and gathering information for themselves. So, a process is required to engage students in building up their own information sources.

Developing selectivity in the use of information

A major problem for many students is the lack of selectivity in using the material they gather. This is probably related to the two preceding problems. Simple, limited search produces a basic satisficing attitude to material gathered, measured by quantity rather than quality leading to develop filtering to prevent information dumping.

Engaging in sophisticated searching

Nicol and Macfarlane-Dick (2006) argue that students should be more actively involved in their learning to help them internalise meaning and make connections with what they already know. So, study programmes need to develop students' abilities to become actively involved in the direction of their own learning. The severe deficiencies in specific study skills were seen as hampering student in becoming fully active learners.

Naturally, in most institutions, library support is available and students are informed of the range of service available. With modern technology, much information is also available online. However, it may be the sense of immediacy required to encourage many students to access it to an appropriate degree. The

reasonable approach would be integrate library skills activity more positively through developing co-operation with academic librarians

Developing co-operation with academic librarians

The greatest contribution to student achievement is the level of engagement (Knight, 2002). Feelings of confidence and achievement encourage engagement. The learning environment and the associated social processes continuously affect students' perceptions about their own abilities and about the tasks to be achieved (King, 2003). Flexible learning developments have focussed on three aspects of the student experience: constructed engagement, self-responsibility and co-learning. The project now built direct library activity was into these developments. Two coursework assessed modules were used to develop this approach. The modules had already been designed and delivered as student-oriented modules with three central features: group work; structured active learning through the use of workbooks; and the use of available technology.

The workbooks formed the basis of instruction and contained a range of scaffolded activities for the students to investigate empirically as well as read material. They were structured to introduce the students to a broader range of material and ideas using online library facilities and other web-based material from sites such as bettermanagement.com.

The workbooks were the basis of co-operative activity with library staff. The principle applied was to create the perceived need to follow their own investigations and create the immediate help for students. This was done by linking the workbook to library activity or a website.

Workbook Annotation

The following examples show how the workbook activities were linked. The relevant part of the activity instructions are given with the library link in square brackets.

Example 1:

.....Scan career and recruitment websites ... [[Click here to link to information on evaluating websites on Skills for Learning](#)]

Clicking on the link will take the student through to a tutorial on evaluating websites on the library website

Example 2:

Using (book reference), [[Link to Online Tutorial: Finding a book on the Library Catalogue](#)] or any other sources [[Click here to link to your Subject Guide on Library Online](#)],

Example 3:

Select five retailers and search *Retail Week*... [[Link to Online Tutorial: Using SFX to find a particular journal title](#)] or similar ...to find any major changes in distribution used by the retailers

The range of online tutorials varies from basic library information to more sophisticated tutorials on critiquing and evaluation.

Preliminary Evaluations

The experiment proved successful and the librarians were pleased with the relatively high of access. Statistics were available in summary form for student access to the seven learning objects object accessed directly from workbooks, though these could not be distinguished by student level. The usage is shown in table 1

Table 1. Use of linked library tutorials

		Oct 08	Nov- 08	Dec- 08	Jan- 09	To- tal
Total students using links		1	40	27	111	179
Total hits		2	123	104	574	803
No. of students (L1+L2)	85					
Usage/student		0.01	0.47	0.32	1.31	2.11
Hits/student		0.02	1.45	1.22	6.75	9.45
Completed work-books	218					
Usage /workbook		0.00	0.18	0.12	0.51	0.84
Hits /workbook		0.01	0.56	0.48	2.63	3.68

The pattern shows increasing usage towards the end of semester, probably reflecting the student works pattern with a little rise in November as the first workbook became due and then a sharp rise in January as two further workbooks were to be submitted. Second-year students should have been familiar with some of the material already and may not have accessed the tutorials. Some tutorials occurred in more than one workbook.

Review: Further Stages

As learning becomes more student-centred, students must take more responsibility for developing and regulating their own learning. The project, as a part of ongoing flexible learning development, was designed to provide students with the knowledge, concepts and methods to encourage them to engage with scholarly and industry research outputs. It was expected that these innovations

would strengthen that engagement, particularly in those areas of the module where current student engagement tends to weaken.

The results so far have been encouraging, but further analysis is being undertaken. The next stage is a process of refinement and further development. There will be more rigorous requirements incorporated into subsequent semesters over the next eighteen months. Use of focus groups in exploring student reaction and making implementation more effective is to be undertaken

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II WORKSHOP

Learning environments

7 Experimenting Social Media With Bachelor Students Studying Business Management

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Abstract

Ways of communicating and socializing with each other have changed considerably over recent years thanks to the rapid ICT development, which has also facilitated the birth of social media. Social media can be defined as internet based tools for sharing and discussing information. The term most often refers to activities that integrate technology, social interaction and the construction of new knowledge. The core concepts surrounding social media are Web 2.0, content and community. The impact of social media is felt in all fields of society including politics, business, education and culture.

Educational institutions have no other choice but to follow suit and dive into the virtual worlds young people inhabit, i.e. to use the means of communication the young use. At the same time social media provide an innovative and open development platform, an opportunity for new ways of facilitating learning that can be interactive, collaborative, fun, and not dependent on place and time.

As a pedagogical tool social media facilitates the use of the Internet, virtual worlds, wiki platforms and web communities to deliver courses or to supplement face-to-face teaching. It provides an innovative and open development platform, an opportunity for new ways of facilitating learning that can be interactive and collaborative. Learning by Development (LbD) connected to social media can support virtual empowerment, which takes place in the triological model of searching for information, communication in communities of practices and knowledge creation in connection with web 2.0. It is believed that bringing the

application of social media tools and learning environments into the same picture with the LbD model will bring a new dimension to social media.

Key Words: Social media, collaborative learning, virtual empowerment, Web 2.0, LbD 2.0, Second Life, Wiki –platform, WebEx, virtual communities, diffusion of innovation

INTRODUCTION

The target of this article is to present some ideas on how the use of social media can be developed for learning practices, procedures and environments, the shared experiences of educational pilot projects (September 2008 - February 2009) and to encourage peers in experimenting with social media as a pedagogical tool.

In the beginning of the article we discuss the information society and new communication skills and introduce Web 2.0 and social media. After that we describe the diffusion of social media among bachelor students and introduce the results of pilot projects made by Laurea in Lohja. Finally, we summarize the results from the LbD, collaborative learning and virtual empowerment points of view.

INFORMATION SOCIETY AND NEW COMMUNICATION SKILLS

The rapid, exponential progress of information and communication technology, networking and globalization can be seen to be among the main megatrends shaping the future. Such knowledge fuels economic growth and social development in every region of the world. Finland is well-known as a knowledge economy driven by information and communication technologies. According to interviews carried out in spring 2008, more than 3.2 million Finns, or some 83 per cent of 16 to 74 year olds, had used the Internet in the three months preceding the interview. In 2004 the corresponding percentage was 70. Internet use is now regular, 78 per cent of the population get online weekly (Statistics Finland).

Social structures are strongly based on networking so a student's ability to take new communications technology into use is essential in modern social structures. An interactive community requires collective competence and communication skills. According to Marja-Liisa Viherä (1999) communication capabilities in the information society are dependent on three components 1) connection or access to networks, 2) the skill and competence to use the means of communica-

tion and 3) the motive or the need to communicate (Figure 1). Connection to and access to networks has improved dramatically. Educational institutions are very involved in this as they are partly responsible for educating new employees and ensuring that they have the appropriate communication skills for work life. In addition, as distributed dynamic cognition is a driving force of the information society, the best way to extend ones capability is to participate in network communities. People's motivation to communicate can be seen as being based on the basic needs of human existence: to be organized, to belong and to do. These basic needs partly grow and develop autonomously and importantly they also require interaction.

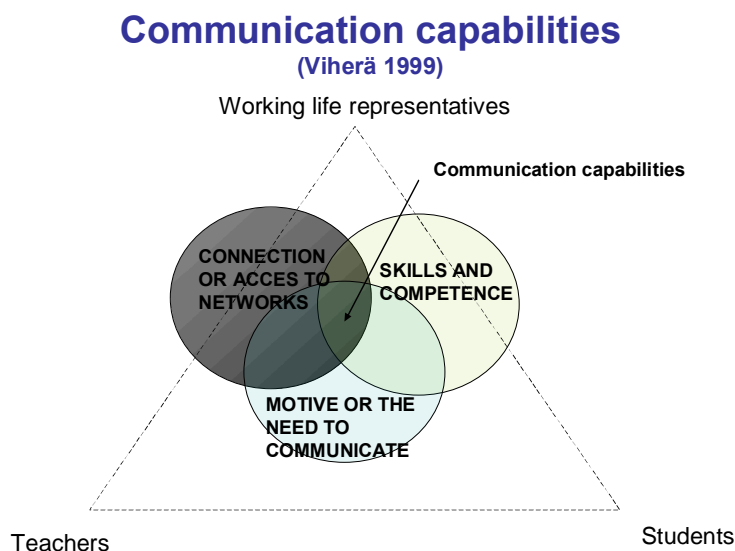


Figure 1. Communication capabilities in the Information Society (Viherä 1999)

WEB 2.0 AND SOCIAL MEDIA

The term Web 2.0 describes the use of World Wide Web technology and web design that aims to enhance creativity, communications, secure information sha-

ring, collaboration and the functionality of the web. Web 2.0 concepts have led to the evolution of web culture communities and hosted services, such as social networking sites, video sharing sites, wikis and blogs. The term Web 2.0 refers to changes in the way software developers and end users utilize the Web. (Wikipedia 29.12.2008)

Social media are primarily Internet and mobile based tools for sharing and discussing information among human beings. The term refers to activities that integrate technology, telecommunications and social interaction, and the construction of words, pictures, videos and audio. This interaction, and the manner in which information is presented, depends on the varied perspectives and "building" of shared meaning among communities, which evolves as people share their stories and experiences. (Wikipedia 29.12.08).

Social media can take many different forms, including Internet forums, weblogs wikis, podcasts, pictures and video. Examples of social media applications are Google Groups (reference, social networking), Wikipedia (reference), MySpace (social networking), Facebook (social networking), You Tube (social networking and video sharing), Second Life (virtual reality), Flickr (photo sharing), and other microblogs such as Jaiku. (Wikipedia 29.12.2008)

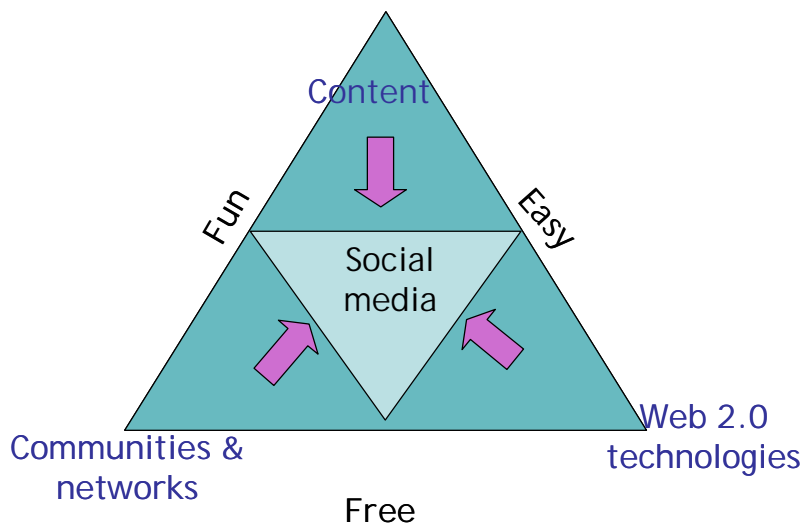


Figure 2. Cornerstones of social media (Näkki, Bäck, Antikainen 2008)

DIFFUSION OF SOCIAL MEDIA AMONG BACHELOR STUDENTS IN LAUREA LOHJA

According to Rogers, people's attitude toward a new technology is a key element in its diffusion. Rogers's innovation decision process theory states that innovation diffusion is a process that occurs over time through knowledge, persuasion, decision, implementation and confirmation. Accordingly, the innovation decision process is the process through which an individual moves from first knowledge of an innovation to forming an attitude towards the innovation and finally forming a decision on whether to adopt or reject the new idea and confirm their decision.

The technology adoption lifecycle model describes the acceptance of a new innovation among defined adopter groups. The process of adoption over time is typically a classical normal distribution or "bell curve." The model indicates that the first group of people to use a new product is called "innovators," followed by "early adopters." Next come the early and late majority, and the last group to eventually adopt a product are called "laggards."

To gain some background information about the diffusion of social media among bachelor students at Laurea, Lohja we asked 55 bachelor students⁵⁹; Which of the social media applications are familiar to them? And how actively do they use social media during their free time and for study purposes?

According to the study over half of the students used YouTube, IRC-galleria, Facebook, Internet forums, wikis, blogs, Messenger and e-mail. The most frequently used applications during a student's spare time were e-mail, Messenger, Facebook and YouTube. (Appendices)

One young woman from that age group (but not a student of Laurea) stated:

"Every time I turn on my computer I open all these applications at the same time just to see what's new".

Even if students know the applications quite well, they only use e-mail and wikis for studying (Appendices). If we look at the daily use of social media, it is easy to see that Internet is basically used for non professional purposes at the moment (Figure 2). There may be several explanations for that huge difference. Either most of the social media applications are more suitable for entertainment or there is a lot of unused potential for teaching and education purposes.

⁵⁹ 19 first year students, 29 second year students and 7 third year students

Attitudes towards the professional use of social media among students might be worth studying in the future because it is clear that students already know and have accepted most of the applications as a part of their leisure time communication.

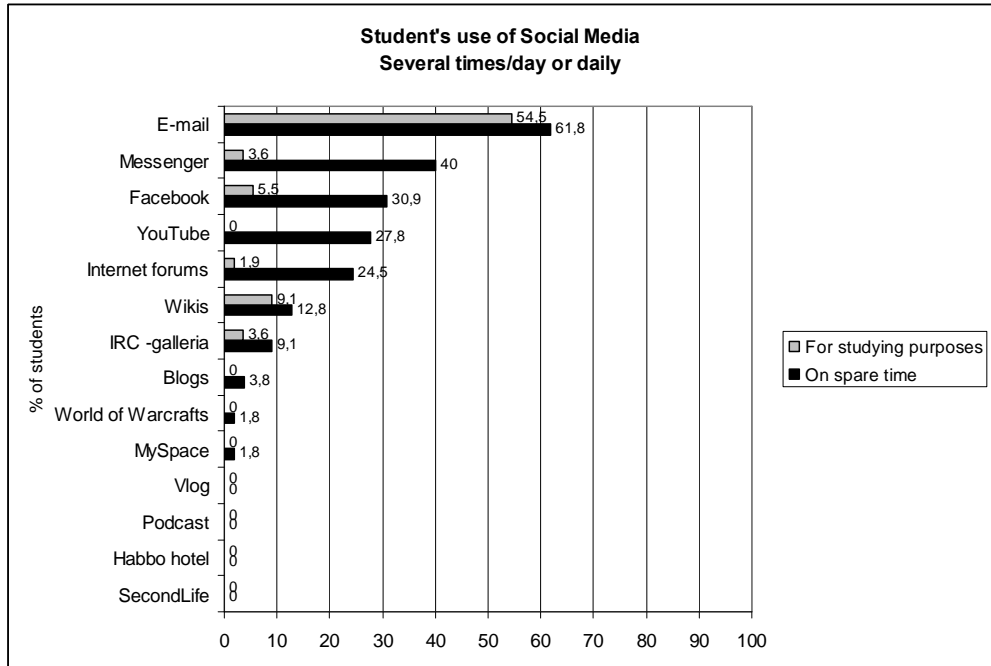


Figure 3. Students use of social media for studying purposes and during their leisure time (n=55)

COLLABRATIVE LEARNING AND VIRTUAL EMPOWERMENT: RESULTS OF PILOT PROJECTS IN LAUREA, LOHJA

In education social media supports collaborative learning and LbD. Collaborative learning is an umbrella term for a variety of approaches in education that involve a joint intellectual effort by students, or students and teachers and or representatives form work life. Collaborative learning refers to methodologies and environments in which learners engage in a common task in which each individual de-

depends on and is accountable to every other individual. Groups work together in searching for understanding, meaning or solutions to their own learning. Collaborative learning activities primarily include collaborative writing and group projects but involve other activities, too. (Wikipedia 29.12.2008)

The future development of the information society and the practices of its learning infrastructure are dependent on the implementation of information and communications technology. Klaus Oesch studied *virtual empowerment* in vocational education in his doctoral dissertation (2007). According to Oesch, virtual empowerment, in education, can take place in the triological model of searching for information, communication in the communities of practices and knowledge creation in connection with Web 2.0. In education, virtual empowerment can be seen as an iterative process (Figure 3):

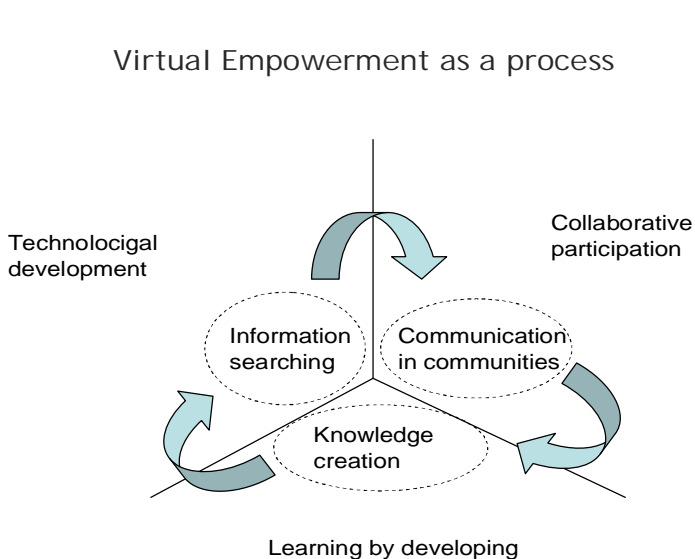


Figure 4. Virtual Empowerment as a process (Oesch 2007)

Pilot Project in Laurea Lohja

A pilot project in 2008 was comprised of two courses that dealt with customer relationship management and the development of e-Business. In both courses a set of instruments related to social media were tested. In case of the course related to e-Business, social media formed also an important part of its contents. Accordingly, the students learnt about new phenomena related to the Internet and its effects on business, marketing and consumer behavior.

The piloting comprised the testing of the following learning environments: Second Life, WebEx sessions and Wiki Platform. The target of the pilot project was to gain a preliminary experience of the social media and their suitability for learning and LbD.

SECOND LIFE

Second Life (SL) is a virtual world launched in 2003. A free client program called Second Life Viewer enables its users, called Residents, to interact with each other through avatars. Residents can explore, meet other residents, socialize, participate in individual and group activities, and create and trade virtual property and services with one another, or travel throughout the world, which residents refer to as the grid.

Second Life was introduced to the bachelor students in context of a course on e-Business. As part of this course the students learnt about the different revenue models that social media can facilitate. Altogether, 16 students took the course.

Second Life offers business many opportunities for marketing and innovation. Many companies, including IBM, the BBC and others, have used it for training purposes, as well as for making consumers interested in their brands.

In this course the students familiarized themselves with Second Life and analyzed how companies act there. The SL related learning process advanced through the following steps:

1. The students were introduced to virtual worlds from the business point of view. Then they learnt the basics of Second Life in theory and practice.
2. The whole group took a “guided tour” in SL, visiting a group of companies and organizations present there. The objective of this visit to SL was to observe how different products and services were projected in SL and what kind of marketing tools the companies were using.

3. The students visited SL independently and their learning task was to experiment with the kind of customer service their avatars obtained from different shops, companies and organizations (e.g. embassies). Reflections on the experiences were then shared through a learning platform.

The students were asked to keep a learning diary during the course in order to write down their reflections related to the contents of the course as well as to the different learning environments introduced. On the basis of the learning diaries and comments obtained from the students it can be concluded that the students found SL an interesting learning environment with lots of potential for future development. Such aspects as technical requirements and usability were observed as major challenges.

The following table (Table 1) brings together the feedback from the 16 students as well as the facilitator's experience; the strengths, weaknesses, opportunities and threats of SL as a learning environment.

Table 1. Second Life in education

<p>Strengths: <u>Learner's perspective:</u> * SL is very immersive, one can feel the presence of others through the avatars * Through SL I gained a new perspective on marketing * Acting through avatars was easy and fun</p> <p><u>Facilitator's perspective:</u> * Interactiveness which gives a new dimension to distance learning * Communalilty * SL provides a multicultural leaning environment with an element of surprise: you never know you will meet in SL. * SL facilitates: creativity, entertainment, collaboration, visualization, fantasy and functionality and networking</p>	<p>Weaknesses: <u>Learner's perspective:</u> * SL is still technically unfinished. The graphical user interface needs to be further developed * It is easy to use SL with a powerful computer</p> <p><u>Facilitator's perspective:</u> * Technical challenges and limitations * Learning to operate on a 3-dimensional platform through an avatar requires time and effort from the facilitator as well as from the learner</p>
<p>Opportunities: <u>Learner's perspective:</u> * I would very much like to participate in virtual classes in SL from my home computer * A good alternative for normal classes as SL is not dependant on place or time * Our kids will be shopping and doing business in SL" * Possibility to learn English in SL</p> <p><u>Facilitator's perspective:</u> * Possibility to use simulated environments to practice real life situations (e.g. how to serve a client, what the consequences of a tsunami are and how to react to it)</p>	<p>Threats: <u>Learner's perspective:</u> * SL will not be adopted by users and business because it is not user-friendly. Thus, it might fade away.</p> <p><u>Facilitator's perspective:</u> * Firewalls * The owner of SL (Linden Lab) stops existing * Negative attitudes towards virtual worlds, often based on ignorance</p>

Other comments from the students:

"I believe the time is not yet right for SL. Perhaps in 5 to 10 years a more developed technique will facilitate better opportunities for making use of SL."

I had thought that SL was a playground for grown-ups but I soon realized its potential for business and also for learning."

"I hope my kids will have an opportunity to use SL. For example, when learning history, they would have the chance to gain insight into how the world was many decades ago".

WIKI -PLATFORM

Wikis can be seen as a combination of web sites and word documents that allow users to easily create and edit content. Wikis represent an open-source technology for information content, which focuses on incremental creation and enhancement by a variety of contributors (Kosonen 2008).

Laurea has its own wiki platform for its employers and students. In addition to that there are also several free wiki platforms available such as Wikidot.com and Pbwiki.com. In the Customer Relationship Management course free wikis were introduced to the students as they were encouraged to also use wikis outside the studying context. In that particular course it was decided to test Pbwiki as it appeared to be easy to set up. A password protected platform was created for the students.

A group of three students were asked to write an article about customer relationship management in a networked society. To gain background information the students interviewed three experts. The experts were D.Sc (Econ) Timo Järven-sivu from HSE, who is an expert on management in strategic networks, Development Manager Pasi Brusi of Elisa Oyj, who is an expert on CRM strategies, and Account Manager Sari Kankaala, of Oy SCA Hygiene Prodyct Ab, who is an expert on Key Account Management. Two interviews were audio recorded and one was documented by written notes.

Students shared the results of the interviews by placing the data into a wiki platform. After that they started to collaboratively work on the content. The students found wiki easy and convenient to use from the beginning. There were no technical challenges and working with wiki did not require any extra competence. It was easy for the students to edit the structure of the article and their own text but they hesitated when it came to editing the text of their friends. Thus,

despite its ease of use, collaborative writing requires much trust, commitment, motivation, and encouragement (Table 2).

Table 2. The wiki platform in education

<p>Strengths:</p> <ul style="list-style-type: none"> - Easy to use - Documents are easy to edit - You can write comments and/or chat - No need for cutting and pasting text from one document to another document - No errors that are common when the same document is edited on different computers by different students - No need to send documents back and forth; less e-mail traffic - Audit trail of every change made so it is easy for the teacher to see who changed what 	<p>Weaknesses:</p> <ul style="list-style-type: none"> - The possibilities for formatting the text are more limited than in the case of a word document (e.g. wiki platforms do not provide spell checks) - The students may not want their peers to see unfinished text
<p>Opportunities:</p> <ul style="list-style-type: none"> - Students, teachers and work life representatives can collaborate - Knowledge sharing, knowledge creation, virtual empowerment and social capital 	<p>Threats:</p> <ul style="list-style-type: none"> - If wiki is seen only as a technical solution for collaborative writing the possibility for real knowledge sharing and knowledge creation might be lost

A student's comment:

"It was not difficult, and editing was easy. Signing in at Pbwiki was a bit uncertain as I did not know what to do with passwords and things like that. In the future that should be explained with better instructions. As an experience the project was very good. But it was difficult to edit text written by others even if it was so easy to use"

ELECTRONIC MEETING

Electronic meeting systems are mediated and they utilize technical facilitators and are usually synchronous i.e. everyone participates at the same time. WebEx

is an on-demand collaboration, online meeting, web conferencing and video application used by Laurea.

Case 1: In a customer relation management course WebEx web conference was used to brainstorm and workshop a research and development plan with a small group of students and a work life representative. The target of the students' development project was to strengthen the customer relationship of young adults with a local bank. There were several alternative possibilities for accomplishing that development project and we decided to consult the Managing Director on that matter at its inception.

We tested WebEx with the students in advance and e-mailed instructions to the bank manager. He regarded the WebEx meeting as an interesting experience and told us that this kind of technology is also used in the bank sector for internal education. Although we had a very experienced host helping us during the WebEx session there were some technical problems in the beginning. The biggest problem was the firewall of the bank. That was something we couldn't anticipate. But as the bank director was motivated to test WebEx he eventually moved to a new location, with new connection, and we began the session. During the session students first shared the development plan and then we discussed possible further steps. We used head sets but not web cameras. Students made notes and the session was considered both useful and enjoyable, especially while collaborating with work life representatives on tight schedules.

Case 2: The WebEx videoconference was introduced as a learning tool to the 16 students that took the course on e-Business. Using WebEx made it possible to have a guest speaker in one of the lectures related to e-Business. In this session the students were able to learn how a Finnish company perceives social media; how the company makes use of it in its business and how it perceives the future use of social media tools.

The situation was new for all: the students, the facilitator as well as the company representative introduced. There were several technical challenges. The first time the company representative did not have a headset with a microphone (required). However, he wanted to try again and the students agreed to participate in an extra session. The second time there was a technical problem, as the company representative found it difficult to hear the voices of the students, but otherwise the session was very successful. The students followed the presentation in a classroom and presented questions to the company representative. All students found WebEx a very useful tool for distance learning and they expressed their willingness to participate in lectures through WebEx.

Table 3. Electronic meeting systems in education

Strengths:	Weaknesses:
<ul style="list-style-type: none"> - Participants in different places can communicate at the same time - Save travel time and energy - It was useful for generating ideas and alternatives, explaining, training - Allowed collaboration via document sharing - Easy to use 	<ul style="list-style-type: none"> - Firewalls - Takes some time to get used to the technology - The learning situation is fully dependant on technology

Some comments from the students:

"Trying WebEx raised my interest in distance learning.... I would be most eager to participate in distance lectures because they allow more flexibility for time management in my own life. ... I find that the basic qualities of WebEx are sufficient for normal lecturing. Perhaps one of the challenges of WebEx is the fact that the student may not attend the whole session at his/her computer...."

"In a short period of time a lot of learning took place. However, with such instruments as WebEx we are totally at the mercy of equipment. If something goes wrong then a lot of time will be wasted."

VIRTUAL COMMUNITIES

A virtual community or an online community is a group of people that primarily interact via communication media such as email, online social networks or instant messenger in addition to face to face, for social, professional, educational or other purposes. If the mechanism is a computer network, it is called an online community. Virtual and online communities have also become a supplementary form of communication between people who know each other primarily through real life.

In the context of our second course on e-Business (started in January 2009), the bachelor students became involved in a new project called TÖPSELI ("plug") which aims at familiarizing local SMEs with the business opportunities provided

by Web 2.0. As part of the project the students work together with interested SMEs in order to analyze their needs, interests and potential in making use of the social media e.g. in marketing.

In order to have a common platform shared by students, local SMEs and interested experts a virtual community has been established for TÖPSELI. As the community has only been open to students since January 2009, it is too early to analyze its usefulness in the SWOT framework. However, it is evident that the openness of a virtual community is definitely one of its strengths. With a couple of “clicks”, the TÖPSELI community brings the students to the same virtual space as local entrepreneurs, Laurea staff and several social media experts from all over Finland. The discussions in the community can be organized in thematic groups and it is easy to insert documents, pictures, video clips and internet links. Being interactive by nature, the TÖPSELI community promotes competence sharing and learning together.



Figure 5. The TÖPSELI Community <http://topseli.ning.com/>

CONCLUSIONS

Are social media applications more suitable for leisure time and related nonprofessional purposes OR do they offer an unexplored potential for learning and teaching?

On the basis of the pilot projects carried out, we believe there is vast potential for using social media in learning and teaching that is independent of place and time.

According to the findings of the present study the analyzed group of students had access to networks and is competent in using communication technologies. However, they were not yet used to applying their social media related abilities for formal learning purposes.

Thus, in the presented pilot projects, a “mini innovation decision process” was carried out for each new learning environment, and can be observed in the light of Roger’s innovation decision process: knowledge, persuasion, decision, implementation and confirmation.

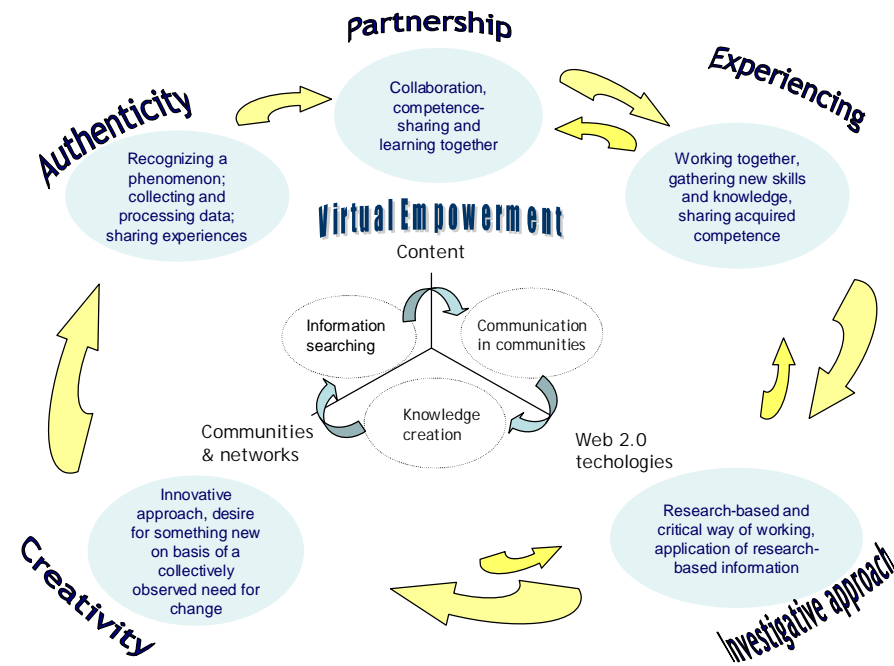
Thanks to the students’ previous knowledge and internet related skills, the focus was on persuasion, decision and implementation.

It could be observed that, after the introduction of the new tools, the natural reservation and fear towards new things was overcome by curiosity to try out something new. This became evident from the learning diaries the students kept during the course related to e-Business. In the beginning of the course some of the students were reserved about being involved with the new learning tools and environments. As the course progressed, their attitudes seemed to change and they became more positive towards it. The hesitant students mostly questioned the usefulness of the new tools in comparison to those already in use (face-to-face teaching, Optima [electronic learning platform] as well as email). They were most skeptical about the usefulness of Second Life. However, the learning diaries revealed that the students perceived the social media “experiments” as very useful and a welcome variation on traditional methods.

Learning tools and learning environments provided by social media enrich the LbD model

From a pedagogical angle, social media tools offer huge potential for interactive and collaborative learning, which are also inherent elements of the Learning by Development concept.

On basis of the experience gained, it is interesting to observe that the application of social media tools and learning environments not only support the LbD approach but enrich it in a significant way. Individual learning, community learning and production of new knowledge are at the core of the LbD model. In terms of this paper we would like to develop a virtual dimension to LbD by placing the triangular elements of social media (content, communities and networks and Web 2.0 technologies) within the core of the model that contributes to virtual empowerment.



Picture 6. LbD 2.0, based on Katariina Raji (2007) and Oesch (2007)

Learning by Developing produces new know-how through individual's learning and community's learning. In our perception, a learning community may also be virtual.

LbD relies on authenticity, experimental nature, research oriented approach, creativeness and partnership. These attributes work in concert with the elements of social media tools and learning environments.

Social media provide an innovative and open development platform, an opportunity for facilitating new ways of learning that can be interactive and collaborative. LbD connected to social media can support virtual empowerment which takes place in the triological model of information searching, communication in communities of practices and knowledge creation in connection with Web 2.0.

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Appendices

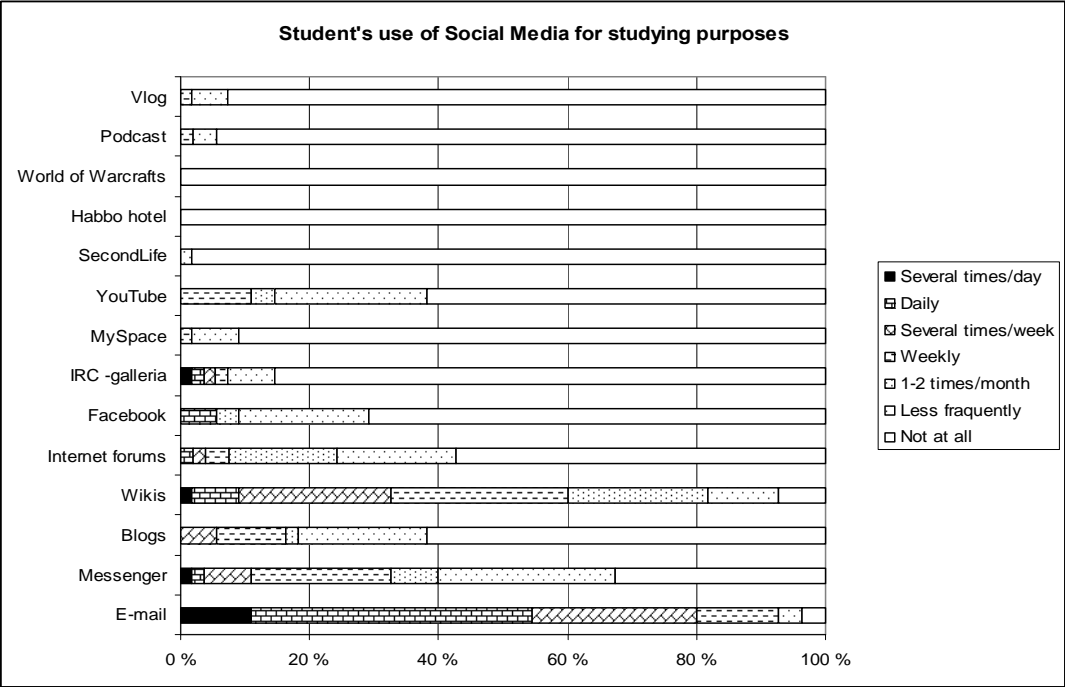


Figure 7. Student's use of social media in their leisure time (n=55)

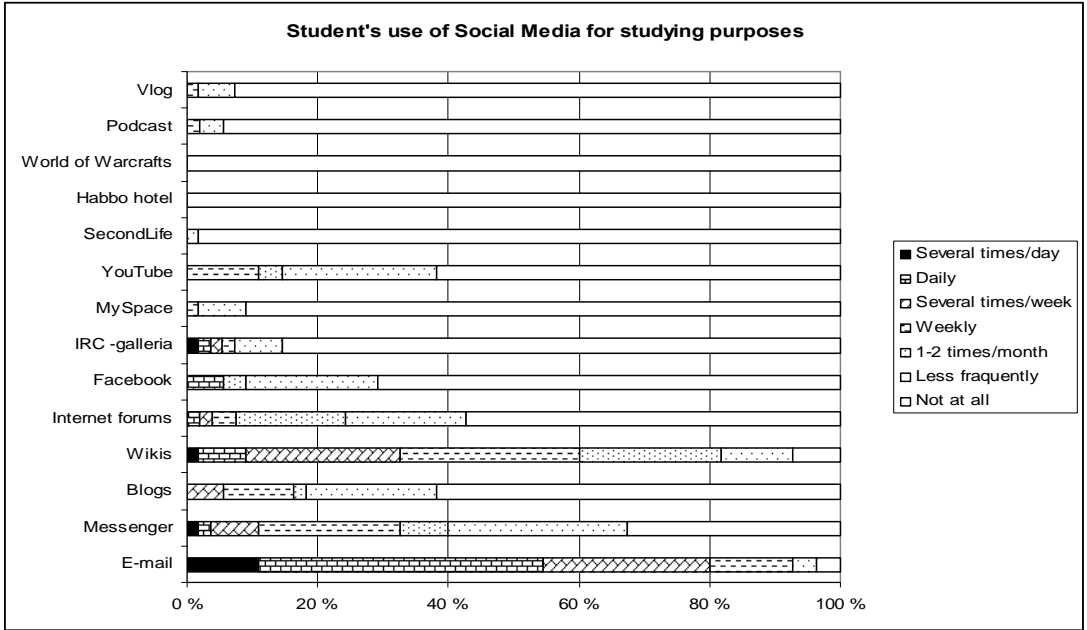


Figure 8. Students use of Social Media for studypurposes (n=55)

8 Learner-Centred Development of Learning Environment

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Abstract

Different kinds of learning environments aim to support students' learning. The challenge is to create a learning environment that both gives structure and guidance for working but also leaves freedom for creativity. My paper discusses the role of internal, external and virtual learning environments and brings up some factors that make a learning environment effective for full-time business students in master's program. The paper presents some preliminary results from empirical qualitative data where students' deeper ideas and thoughts related to their learning and learning environments are revealed.

Introduction

Contemporary teaching emphasizes learner orientation. The content of teaching needs to be defined as students' learning objectives, not just teaching themes. Deep understanding is emphasized and this should be seen also in evaluation, where continuous evaluation and deep understanding opposed remembering specific things is emphasized. The researchers have also found that the success of a learning-oriented perspective depends on the creation of an effective learning environment (Manninen 2009, Gonzalez, Ingram, LaForge & Leigh 2004, Young 2002). Learning environments may differ from traditional class-room setting to libraries, museums, forest, internet, companies, trainee places; almost anything can be a learning environment (Manninen, Burman, Koivunen, Kuittinen, Luukannel, Passi & Särkkä 2007). Integrated learning environment has also been suggested to improve the ability to be creative and effective in solving problems in various contexts (Eickmann, Kolb & Kolb 2002). The question

arises, how could we take learner-centered approach into account while building integrated learning environments?

The aim of this paper is to bring up a learner-centered approach into the creation of learning environment for full-time business students. First, the area of multiple learning environments is taken up. Second, the meanings attached to studies within the target group are opened up and third, suggestions for a physical learning environment that supports students learning are generated.

Multiple learning environments

Typical learning environments include schools and class rooms within them, libraries and trainee places. However, learning goes on all the time. Thus a learning environment defined in a broad sense is not just a particular place, but all the factors affecting the learning process. Common factors that are present in different learning environments are the place (or space), content (information), methods and social factors (other people) (Nissinen 2003). Learning environments can also be divided into internal, external and virtual learning environments (Koli 2003, Jaskari 2008a).

Internal learning environment is the mind of the learner. This includes earlier experiences, habits, beliefs, fears, emotions, skills, knowledge, motivation and other factors that only the learner can change. Even if the teaching and coaching can support the change in attitudes, the mental change has to be done by individual herself. Internal learning environment is very crucial in learning. Especially subjective attitudes, beliefs and emotions may enhance or hinder learning. (Koli 2003.) As Andersson (2006) found out, many students look for safe solutions and fear putting them in risk if not knowing what will happen.

It is often assumed that students are well motivated in learning new things and will put time and effort into their studies. There are of course well motivated and curious students, but sometimes the case may be the opposite; some students have other things in mind, they are eager to work part-time in order to get money. Also at the age on 20-25 they may be looking for partner and friends are very important. Sometimes the school seems to be something that hinders their life more than something where they get the so called flow-experience.

The external learning environment includes physical and social environment that guide the learning. A concrete environment such as class room, museum, computers and social space can be one form of learning environment. Also support materials, such as text books, references, assignments, time tables, course

structures are factors present in an external learning environment. (Koli 2003, Manninen et al. 2007, Nissinen 2003.) One of the most typical learning environments outside class room are libraries that enable students to find new knowledge and relate that to previous knowledge.

External learning environments can be built to simulate authentic situations. For example Finnair has a simulation airplane for pilots, where they can safely learn to take off and land before trying with real plane. The simulator allows the trial and error. (Finnair 2006.) Within business studies work and trainee places can form an important learning environment. The special advantage of this kind of environment is the transition of tacit knowledge. Theoretical constructs come alive in daily routines and different projects. The relative aspects of business decision making become increasingly clear. Daily decision-making, team-work, routines and dead-lines appear explicitly. Also business etiquette, dress codes and other ideas not related solely to contents of the curriculum become ordinary and students grow into their professional reference group.

There are also changing, need based environments. These can be used when one wants to loosen up from daily practices in order to be more innovative and creative. An example from business life is Creative Lab in Western Finland Design Institute. The innovative multisensory environment enhances creative thinking and allows for example different kinds of ideas to develop into new product ideas. The lab is mostly used by companies but can be used also by student groups. (Muova 2009.)

The Finnish idea of knowledge society has extended its tentacles also into learning. That is why the word learning environment in Finnish is most often associated with virtual learning environments. These virtual environments have been under intense development lately and there are several research programs that aim to both develop and study virtual learning environments. (Opetusministeriö 2004.) The most traditional form of virtual learning environment is a computer where material and exercise on some topic can be found. It can be structured as a course or just a space that has information. It can be placed in one particular computer or in server where it can be used through internet. In this sense the whole internet is one large learning environment. Its advantage is that it is independent of time and place as long as the student has access to the computer. (Koli & Silander 2003, Mänty & Nissinen 2005.) Internet based environments such as Second Life bring also up the social and interactive aspects and in that way aims at building the social capital in virtual life (see elsewhere in this publication). Virtual learning environment can also be in the form of games, which leads into "edutainment", education and entertainment put together (Hietanen &

Rubin 2004). Koli and Silander (2003) have discussed how to build a virtual learning environment that most supports learning process.

An important aspect of external learning environment is social factors. It has been shown the social factors such as other students, teams and working groups, teachers, coaches, faculty members and business people are important in students' learning process. This social capital is crucial building block in effective learning environment. It consists of four factors, namely connections among students, building trust with students, establishing shared values with students and providing equitable opportunities for students. Researchers argue that the more we see these factors present, the higher is the social capital of the learning environment. Higher social capital will lead to collaboration, commitment and positive learning environment. (Gonzalez et al. 2004.)

In the same vein that internal learning environment, i.e. the mind of the learner, can hinder the learning; also the external environment can do the same. For example a social gossip about some course to be not worthwhile making an effort may decrease students' motivation. Also, if the teacher or other faculty members cannot be reached, if computers do not work or the password is incorrect, the students may feel as they don't need to work either.

Different learning environments are not separate but closely connected to each other. Together they form the context, atmosphere and circumstances, where the learning takes place (Koli 2003). One of the challenges is to build environments that support student's experiential learning process. For example, students may be resistant to adopting creative practices as there are barriers to expressing creativity such as fear of failure, fear of doing something different and fear of taking risks (Anderson 2006). Thus the external learning environment should support students' creativity, to facilitate trial-and-error, to build confidence in students and their thinking. As student business projects are within curricula, there usually is time constraints, the working time may be pre-planned, say for example 16 weeks. The challenge is to form such learning environments that support also these time and possible budget constraints.

But what is the learner's aspect into their learning and into the environments where they learn? What can we learn from the way students study, where they study and when and where they find themselves creative, efficient and motivated? These questions led into methodological choices elaborated below.

Methodology

A holistic approach into understanding the students and their studies was adopted. This followed the idea presented already in 1963 by Levy and Boyd, where they called for more holistic understanding of consumer lives. The aim of the data collection was to relieve learners' deeper thoughts and ideas about learning and its role in their life. This led into ideas and techniques presented by Gerald Zaltman called Z-met (Zaltman 1996).

A master's level marketing course in the University of Vaasa called "Concept Factory" was chosen for data gathering. This course requires students work in teams of 3-4 students and solve real-life development tasks for companies. Examples of the projects include developing a new brand concept for renewed business idea, concepting new product ideas for energy consumption, creating new business model for recycling company, and developing product concepts for a special interest group in the World Natural Heritage area situated in Mustasaari.

The research problem and objectives for each project are defined together by the students and company representative, thus all the projects are demanding and business oriented. All projects require self discipline, team work skills, creativeness as well as substance knowledge of different aspects of marketing. The working period runs for autumn term, 12-16 weeks depending on the project. The course also includes workshops on project management, creativity and design management. The whole class of 20 students meet weekly with the coaching teacher, on the top of that other types of coaching is available. The course is assessed by ongoing evaluation in two stages. First, depending on the project and the amount of work required it will give students 4-10 ects. Second, the outcome and the process are assessed with a mark from 0-5. The promising feedback from both the previous year and this autumn show that students have found the projects interesting, challenging, rewarding but more time consuming than expected.

As a creative assignment in the beginning of the course collages were made. The students were asked to collect pictures, words, photos or other material that connotes to a topic "My studies". However, pictures of studies should not be included. This material was used to form a collage onto A3-paper. Altogether 20 collages were completed. An example of a collage is appendix 1. After completing the collages, the students were interviewed in groups. The interview followed the suggestions proposed by Zaltman in order to reveal the deeper meaning of different pictures for the student. During the interview specific attention was

given to learning environments. In the end the topic was also explicitly taken up. Students were asked how they understand the concept of learning environment. They were also asked to elaborate what kind of learning environments they use and why. All interviews were conducted in Finnish.

The audio data was written down in word and it resulted 43 pages of written text. It was analysed using qualitative content analysis.

Results

The following paragraphs present the preliminary results from the data gathered. First, students' ideas of different learning environments are presented, then the main themes of their collages are analysed and finally feelings and multisensory aspects of studies and learning environments are presented. All these analyses aim at giving insight into the creation of innovative learning environment for business students.

Different learning environments used

Students recognize not only one but several, overlapping learning environments. When asking what learning environments they used, they mentioned Moodle (virtual platform), E-mail, Google and internet, mobile phone, library, team work rooms and lecture rooms. This seems to be quite traditional view into learning environments including schools area, library, virtual environments and internet. However, when asked where they study, the concept was slightly expanded.

Students mentioned that they study at home (own flat, parents' home in study town or elsewhere, boyfriend's or girlfriend's home), in a library, in a team-work room at the library, in a work office and in a train. Only train seems to be somewhat non-traditional place for working and may result from the fact that many students travel weekly from Vaasa to their home-town and back. From this question it seems as though studying is mostly done alone, only team-work rooms are places where groups are discussed.

Home was elaborated as a place where one can study in peace and that helps to concentrate. It was valued positively that one can make some coffee while studying; however there was also a risk of too many stimuli to decrease concentration. One of the students described that she is more creative at home than in the library.

The library was described slightly surprisingly as a place where it is difficult to concentrate as people wander around and one easily starts to follow the people coming in and going out. Especially if someone is using high heels, it makes a lot of noise. At the same time students described that the social pressure is strong; when one sees others are studying, one makes herself concentrate as well. The special sea scenery from Tritonia's reading room was described as relaxing.

The team-work rooms that are situated in Tritonia were also mentioned as a place where students study. These are rooms with a table and chairs. In order to use these rooms, students make reservation and bring their own material with them. These rooms were described as good but harsh. The reservation system was explained to make students work more efficiently. However, the students preferred a place where one doesn't need to carry thing back and forth all the time.

The train was mentioned as place where one has nothing else to do than read. Train suits especially well if you are studying alone. People passing by where described more as something nice to follow opposed to a disturbing factor. An office was also mentioned once as a learning environment. An open office environment allows one to feel as part of the larger team. At the same time one has privacy. A summary of different study places and the both positive and negative comments associated with them are listed in table 1.

Table 1 Different study places used.

Place	Positive comments	Negative comments
Home (own, parents', friends')	<ul style="list-style-type: none"> - One can study in peace. - You can make some coffee and do other things as well. - in own flat it is easier to concentrate than in parents' house - at home one feels to be more creative than in library 	<ul style="list-style-type: none"> - at home your thoughts may wander and you do all other things - tv and computer may disturb - too much stimuli at home
Library (Tritonia)	<ul style="list-style-type: none"> - the see scenery is perfect, relaxing - social pressure – when you see that others read, you continue yourself 	<ul style="list-style-type: none"> - one cannot concentrate at the library – too many people wandering around. - one starts to follow people going out and coming in - high heels make noise
Team-work rooms at library	<ul style="list-style-type: none"> - The spaces are good but quite harh. - as you need to reserve the time, it makes you work faster and concentrate on the matter. 	<ul style="list-style-type: none"> - it would be better if you didn't need to carry al the books back every time.
Train	<ul style="list-style-type: none"> - there is nothing else to do than read - it's nice to see other people as you study, they don't disturb as in the library - a good place to study alone 	
Open office at work place	<ul style="list-style-type: none"> - it's nice that you can get help easily and everyone can give their comments. Still you have your own space and you know who sits besides you. 	

Themes of studies

The group interviews based on collage assignment were analysed by finding the themes that students where talking about. Several themes came up.

An all-embracing theme in most cases was the *goal orientation*. Students saw the studies as means of reaching some goal. This goal was described to be future working place, diploma from the school and learning itself. This goal orientation is not surprising; the students interviewed were master's level students and the life after the university appears to be quite close to them. The goal was described as something to look for, but also there was a fear of reaching the level of learning that was expected in the future working places. Students' goal orientation was described in terms of "my goal", so it was defined in personal terms,

which is not surprising. In discussion of where and how people study it became clear that many study both alone and in groups.

"This picture in the middle symbolizes the working life where I am heading to and what the future working could be like. Stylish environment, some kind of marketing job, has to do with trends, co-workers about the same age, youthful working place; one is in the spirit of the times." (60)

In many cases two contradicting themes were *business and pleasure*. Attending the lectures, doing team work, passing exams was often described as hard work, where the students need to schedule lectures and assignment in order to do them properly. Many students described this hard work stressful with a lot of time pressure. Even the feelings were described as uneasy and depressed. However, also the feelings of success and joy were mentioned relating to hard work getting done. On contrary to hard work students mentioned free time, relaxation and breaks. Quite often these matters were situated outside of university area. Parties, get-togethers with other students, exchange programs and travelling were mentioned. Within university area the coffee breaks and local café were mentioned several times. These situations were also described as more creative opposed to stressful lectures, team work or studying alone.

This part of my collage symbolizes relaxation and calming down. It is what you need to counterbalance studies. (63).

A strong emphasis was put on *social aspects* of studying. Friends, team work, parties, and communality were things taken up and discussed. As described already above, the social factors were often related to non-study affairs such as parties and coffee breaks. From the study point of view, teamwork was most often mentioned. Also the importance of networking was explained. However, the social network was mostly extended to other students, not so much to teachers, faculty or business. Social factors play an important role in relaxation and having fun. Coffee breaks together with friends were described as creative moments. For example the idea generation phase of the new assignment was explained as best done in a café and the writing phase was best done in teamwork rooms. Keeping in touch was important and it was described that as long as one can reach the internet, one has the friends close and feels safe.

"Here is a picture where guys are carrying a wood. It symbolizes communality, friendship, socialization and team-work. When we study, everyone does their own thing, but at the same time we all are here together in the same study place and help each other". (61)

"And the network is important. During the studies one creates the network and this can be used later, when one is looking for a job or in a social manner. Study time and interaction among students makes you also grow as a person". (70)

Learning environments were described in terms of how *peaceful* it is to study there. Studying was explained as needing concentration and for example high heels were described as a disturbing noise in the library. On contrary, home was described as more a creative place to study than a library. Inspiration was sought for from other things. It seems that students strongly see studying as doing something alone in peace. However, if we take a perspective that learning is happens all the time, interaction with others becomes very important aspect.

"I did this collage at home. I wanted to do it in peace. In the library I would not have been as creative or thought about things so freely. You go to the library to study hard and memorize, it is more serious in the library." (59)

Students explained studying being a period of time, when a one can still make mistakes. One does not have to know all the right answers yet, and there is a need for trial and error in order to understand things deeply. There is a *"license to make mistakes"* (64) in a *safe* environment. The security helps students to express their own ideas and motivate their arguments. At the same time students were aiming at stepping into new territories, challenging themselves with new tasks. A secure foundation allows students to reach for more challenging and troubled problems.

"To be able to study requires a feeling of a basic security, concentration, creativity and self-discipline". (60)

The theme of security goes along with Andersson (2006), who found out that MBA students fear of making mistakes. A secure environment encourages to trial and allows the errors as well.

Altogether several themes rose up from this data. The clear emphasis was on goal orientation. Most of the students have a clear idea what they want to achieve. Thus the learning environment should support this goal setting. The university and studies seem to be the business side for most and the pleasure is sought after from somewhere else. Maybe a learning environment could support some creative practises that students find more explicit during the free time. If nothing else, at least a possibility for drinking coffee is important. Social factors were as important as the earlier literature suggested. However, more emphasis could be put on supporting the learning within the social group. At the moment it seems as students keep the studying as their private matter and social matters are more supporting each others and having fun. This also was seen in a matter

that students talked about peaceful learning environment for their studying, even though inspiration and creativity was appreciated. An important aspect of learning environment is the feeling of basic security. When students' feel secure, they are more eager to try new things and are not afraid of making mistakes.

Feelings and multisensory aspects of learning

Altogether the topic of "my studies" brought out a spectrum of feelings. This is foreseeable; most of the students have studied many years and have a lot of experiences from positive and negative sides of study life. Positive feelings described were joy, happiness, and good times with friends, feeling of self accomplishment and surpassing the expectations. Clearly a task that was considered as a challenge, it may be for example a difficult assignment that required a lot of mental effort, gave self-assurance if completed successfully. The satisfaction arises from completing challenging tasks successfully. On the other hand the studies were also described as too stressful, depressing and oppressive.

Experiential learning emphasizes the use of different senses in order to make the experience stronger (Kolb 1984). As the pedagogical choices made for the course under examination stresses experiential learning, it is interesting to discuss how could different senses be activated in physical learning environment? The visual aspects include the form and shape of different object as well as the lightning that creates also atmosphere. With the lightning different areas can be formed to be for more active, creative or relaxing activities. Different materials and the temperature can form images of home, café or office. The hearing of computers and others working may give an impression of office and teamwork where as the ripple of the water is an universal sound of relaxation, the sound of coffee machine reminds of breaks and music (maybe using headphones) may give drive or relax. On contrary, a cacophony of voices, echoing cold spaces may become unapproachable. The smell of fresh air, sometimes maybe a coffee, will not only feel nice but affects how well people can work. Surprisingly also taste can be used in experience creation, drinks, snacks and food chosen to be served in trainings and work-shops can relate more to those used in business than in student life.

Discussion

This research project started by asking what would be an effective and inspirational working environment for master's level business students. A specific focus was taken into physical external learning environment, despite the fact that lot of

research is conducted on virtual learning environments (Opetusministeriö 2004, Hietanen & Rubin 2004). A learner-centered approach was used in order to reveal deeper meanings that students attach to their studies. The dimensions mentioned above are factors that seem to be important when developing a physical learning environment. However, a combination of different aspects is more important than emphasizing just one or couple of them.

The social capital and the ownership of the learning space are redesigned every time a new student group starts to work there. The space should also allow different learning, working and teaching styles to flourish. That is why the design of a learning space needs to maintain some flexibility over time.

The study done here is specifically targeted to Master's level marketing students that work in the practical course. The course emphasises creative project and team work as well as deep cooperation with different partners. It thus acts as a bridge between university and future working life. It enables the transfer of tacit knowledge; it gives role models and shows the desired way of behaving. Still, it allows trial and error. Future research will take a more constructive approach and build a physical environment.

The main focus in this paper is in external learning environment and especially in a physical learning environment. The project, of which this study is part of, aims at constructing a physical learning environment for business students. However, it has been taken into account that the physical environment also needs a process, pedagogy, to support the actions and learning objectives (Jaskari 2008a, b).

The development of learning environment means cooperation between different parties. It should not rely solely on learners', teachers' or systems developers' opinions as many different aspects need to be considered. However, the learner-centered approach was successful in giving some insight into when and where the learners find themselves most creative and efficient to complete the given business tasks.

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9 The impact of netiquette on on-line group work: a study of UK Open University students

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Abstract

This paper argues that the introduction of netiquette principles at the beginning of a wholly online course, followed by assessment of the application of the principles, influences the long term behaviour within task based group work. The research used a mixed qualitative methodological approach; three case studies, virtual ethnography and constructed grounded theory to develop the emergent themes of the study. The findings are based on rigorous analysis of online conference transcripts, continuous assessment and end of course assessment, together with post course interviews. The paper will examine the emergent findings observed during a series of online task based group activities.

Context

This small in depth study was based on three tutor group cohorts of United Kingdom Open University foundation level students studying in a wholly online learning environment; course material was delivered through the web and supported primarily through FirstClass conferencing facilities, with telephone support when appropriate. The Open University offer an open access policy, "excellence without exclusion" (Open University Media Relations, No date) for foundation level courses, where no prior learning or experience is required. The participants in the study were non traditional learners with prior experience ranging from no post compulsory education to second degrees, ages ranged from eighteen to post retirement age.

Students engaged in a series of small group activities throughout the duration of the course. The product of the task was not assessed, only their contribution and reflection on their contribution. In the first assignment their application of netiquette principles was assessed. The underpinning pedagogy of the course was constructivist which was afforded by online communication this would not have

been available to conventional distance learners previously (Alexander, 2000, Alexander 2000c). Constructivist pedagogy supports the process by which adults create meaning and transforms their understanding through dialogue and discussion (Bruffee, 1999).

The focus of the study was to examine the processes used by the online students whilst engaged in small group work. As the tutor on the course, it was recognised that they were not following the popular model of Tuckman's (1965) forming, norming and storming progression, still referred to in many student handbooks and text. More over, it was not clear from a tutor perspective what models were being adopted. Therefore as a practitioner researcher, this provided an opportunity to examine the process in depth from a participant observer perspective.

Methodology and data collection

A mixed methodological approach was taken to the qualitative research, with the application of ethnography and grounded theory, using the three cohorts as individual case studies. The use of ethnography within the virtual learning environment provided an opportunity for participant observation, as a practitioner researcher, and therefore moved the methodology towards virtual ethnography within an educational context. The application of grounded theory also required a more flexible approach as Charmaz (2006, p15) states:

"Neither observer not observed come to a scene untouched by the world. Researchers and research participants make assumptions about what is real, possess stocks of knowledge, occupy social status, and pursue purposes that influence their respective views and actions in the presence of each other".

The application of constructed grounded theory legitimises the adoption of a flexible strategy for data collection and analysis (Glaser and Strauss, 1967; Charmaz, 2006). The data collected included the full conference transcripts for each group work activity or task (known as an Online Tutorial or OLT); these were verified as the complete record of the communication within the group through interviews conducted after completion of the course. Other sources of data included reflection on the group work process, submitted as part of the summative assessment, the end of course assessment together with tutor notes taken at the time. Triangulation of the data was achieved through the cross-referencing of the data sources with the evidence used to support individual reflections on the group work process in the assessment.

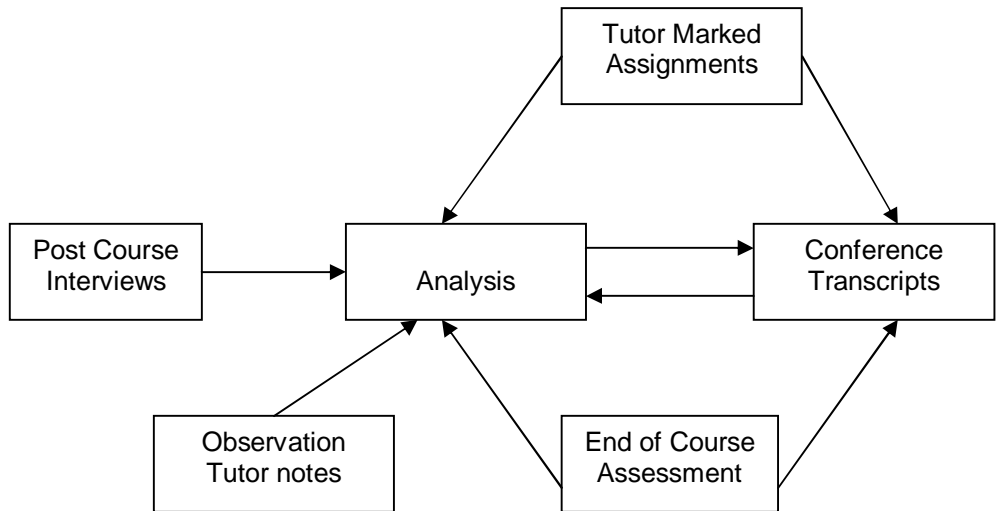


Figure 1. Triangulation of data

The influence of netiquette

The term netiquette refers to the “social conventions of computer conferencing” (Alexander, 2000b), these are principles of good electronic communication through computer conferencing. Introduced as guidelines for users of computer conferencing, due to the accepted limitations such as no visual cues, in recognition there was a need for additional care to ensure intentions were not misinterpreted. Early reference to netiquette guidelines can be found in the “RFC 1855 Netiquette Guidelines” (1995) covering one to one and one to many communications through electronic media. Alexander’s (2000b) guidelines were produced specifically a set of principles for use by UK Open University students using FirstClass conferencing and are based on his personal experience and research with Bob Zimmerman (1996), which he called “Practical Communication Principles (PCPs)”. Alexander’s (2000) netiquette principles are summarised below:

Consensus – understanding others views, finding a conclusion which suits everyone

Thank, acknowledge and support people freely

Acknowledge before differing

Speak from own perspective – IMHO

Avoid flaming spirals

Use of emoticons to express emotion

Before sending an angry message take a break and consider a milder one

Use quoting sparingly

Send messages to the appropriate place

Keep to subject

Keep messages short

Use subject line

Be aware of copyright issues and inappropriate language

From “Extract from a Communications Guide, prepared by Gary Alexander for use on various Open University courses”

Netiquette formed a key component of the first module and Online Tutorial (OLT) activity 02 “Online Writing”, and aligned to the learning outcomes of the first Tutor Marked Assignment (TMA) undertaken by the students:

Extract from the OLT 2 guidance:

“The aim of this task is to provide a motivating shared activity that helps your group to gel. It is linked to TMA01 question 2 where 40 marks are allocated for the students' reflections on principles of netiquette. (OLT02, Online writing)

The TMA01 required students to reflect on one of their postings made to their subgroups or to the tutor group conference, demonstrating their understanding and application of the concept of netiquette. The use of the principles of netiquette, introduced week two of the course, created a boundary of acceptable behaviour; there was no discussion or negotiation within the tutor groups on ground rules for posting messages. All three cohorts received the same guidance at the same point in the course; therefore it is difficult to comment on what would have happened in the groups without this influential approach.

Not all of the netiquette principles, listed above, were of direct relevance to the focus of the study the focus being group work processes; therefore the individual principles did not form part of the coding. However, the following emerged as significant eliciting regular comment in the TMA reflections and observations.

Acknowledgement

Acknowledgement appears in Alexander's (2000b) netiquette in two forms: one as a positive means of support, the other negative pre-empting disagreement. Analysis of the conference transcripts provided evidence of acknowledgement used primarily as support, recognition of a prior posting, suggestion and thanks. Acknowledgement was frequently attributed to a named member of the group or tutor for example, "Please join us, M – we need all the help we can get!" and "Thanks, Sally", "Pleased to hear from you, V". The acknowledgement, although appearing superficial, created a sense of belonging with the group.

The coding for acknowledgement provides an insight into how the group developed as a sociable community rather than impersonal as perceived in the early literature on computer mediated communication (see Sproull and Kiesler, 1986; Culman and Markus, 1987; Asensio, Hodgson and Trehan, 2000; McDonald, 2002). The potential of high levels of responsiveness within computer mediated conferencing is one of the unique features of its use in distance learning (Rouke et al, 1999) and one of the underpinning principles of the course allowing distance learning students access to a peer group contact.

Speaking from own perspective

This principle of netiquette goes beyond the use of the acronym "IMHO" (in my humble opinion). Alexander's (2000b) guidance suggests ways of avoiding tension which may develop if postings by students are written in the third party or in a dogmatic way. Some students however, adopted the technique as a way of expressing their opinions, whilst masking their actual views. In isolation, IMHO statement would appear to be supportive, by coercing and cajoling group members to take a shared responsibility in the task. In one example the tutor notes/field notes, written at the time of the conference posting, identified a sense of agitation about the speed of engagement; although the posting was made only 4 days into the group work activity. The tutor notes identified a need to monitor the situation.

Writing from their own perspective felt unnatural for some students, feeling that it was atypical way to converse with peers. For example:

"I wrote in the first person singular, leaving room for discussion and avoiding dictatorial statements. (-although Gary Alexander mentions "IMHO -In my humble opinion" I feel this is too creepy to write in a message!)" (TMA01 Reflection, Student AE)

The comment above reflects the considered approach, underpinned by netiquette principles, taken to conference postings and the façade which this represents, at least in the early phases of the course. This is exemplified in the following reflection:

"Although we are happy to communicate online, we are all often far too polite to tell someone we think they are wrong.

...

It is important people have the courage to disagree as this allows us to see things from different perspectives but this confidence can only come with time and practice." (TMA02 Reflection, Student AE)

The obsequious nature of the postings had an impact when making corrections to relevant facts. The confidence in giving constructive feedback took over 6 months to develop, supported by an OLT activity where students gave feedback on eBusiness proposals. However, not all students needed to engage in this final OLT or related TMA and therefore some never experienced the receipt of constructive and developmental peer feedback: This was captured in a student's reflection on the whole group work experience:

"In my experience the biggest disadvantage is not receiving feedback from your group when something is not quite right. Receiving positive feedback is excellent, however, I found that up to completing the compulsory critique exercise in module 3 criticism of any form has not been evident. Correcting each other online is not easy, failure to do so is a real disadvantage to student's learning." (ECA reflection, Student AP)

Students were much more comfortable correcting "social faux pas", rather than factual mistakes. Emoticons were adopted as an expression of humour, for example:

"Theres [sic] 4 of us K :P⁶⁰" (Conference transcript, Student AN)

My analysis coding memorandum, written during the grounded theory analysis of the conference transcript, read: "Was this being over confident or had this bond already developed and permission given?", questioned the susceptibility of misinterpretation faced within online groups and communities during the early stages of development.

⁶⁰ Emoticon representing a tongue being stuck out

Lack of flaming

One of the concerns within online discussions in the public arena is flaming, the hostile expression of strong emotions within computer mediate conferencing (Jones, 1998). A great deal of attention has been drawn to flaming as the negative side to computer conferencing, however Lea et al (1992) state that it is perhaps the fact that it is remembered rather than it being observed which draws attention. This did not occur in any of the groups within the three tutor group cohorts; influenced in part by the additional support materials which encouraged students to engage in the discussions, whilst applying netiquette principles, such as Plumpton's (2001) "How students can make conferencing work":

"... Creative conflict can be much more powerful than polite agreement - deep learning comes out of the thrust and counter-thrust of debate, and you are likely to remember a good argument! As long as you use the Netiquette principles of checking you understand what the other person said, and criticising the idea not the person, then it's fine to disagree." (Extract from Plumpton, 2001)

Jaques and Salmon (2007), a popular student guide to group work, offers little guidance on the prevention of flaming beyond, "Tardiness, rudeness or inconsistency in response to others tend to be forgiven less easily than in a more transient face-to-face setting (p. 72). There was potential for flaming to occur within the groups, however due to the lack of evidence is difficult to attribute this success to the management of the tutor groups, netiquette materials or the collegial, peer support of adult learners.

Netiquette acculturation

The long term influence of netiquette was addressed by more than one participant. They felt that it had acculturated the tutor group to the extent that this was expressed in their end of course assessment (ECA) as one of the benefits of group work. The following are unsolicited observations:

From what I have witnessed from the first class forums, netiquette has been well adhere too [sic], which has made it so easy to contribute towards group discussions and this is demonstrated by the way it brings people together. (ECA 2004, Student O)

"Another advantage is the interaction between members to improve upon their social skills. This can helps [sic] members of the group to build up a good work-

ing relationship together by impressing upon the members the need for good netiquette as expressed by Gary Alexander's work." (ECA 2004, Student AA)

The application of netiquette is closely linked to the social identity developed by the participants.

Netiquette and online group development

Netiquette is a concept used outside the Open University, however there is little literature relating it directly to the output from online group tasks within an educational setting. The tone encouraged in the communication, ie thanking and supporting, acknowledging and expression of emotion, affords group cohesiveness. Group cohesiveness through mutual aid, shared understanding, trust and task commitment etc (Driskell, Radtke and Salas (2003), was developed, albeit superficial in some instances. Netiquette principles legitimized the use of emoticons to express emotion (and humour) to personalized communication, therefore supplanting visual social cues and increasing intimacy, which is contrary to the assertion proposed by Straus (1997) and Weisband and Atwater (1999). Driskell, Radtke and Salas (2003) imply that ad hoc teams who have never met will have difficulty in developing team bonds. This was not evident from the active participants in the groups.

This study examined students working together collaboratively within a relatively short time, and without having met face to face or established common characteristics beyond being on the same course; this is contrary to social identity theory (Tajfel, 1978). I argue that the influence of netiquette had a positive effect on the group development at this early stage of the course, postings were made deliberately to make peers feel integrated within the groups, which was reflected in the TMA submissions stating:

"I believe that the first two paragraphs of message 1 and the list of jobs worked well in motivating the group into choosing a personality. They also volunteered for one of the jobs after this.

...

There were numerous places on both messages that I could have been more polite and used IMHO a little better."

(Extract from TMA01 2005, Student A)

"I believe this message 1 was a complete success, as by writing a short reason for choosing Charles Babbage sparked a lot of support and enthusiasm for the

other members of the tutor group. This eventually lead [sic] to the groups [sic] choice of person to produce the website on as [sic] Charles Babbage ..."

(Extract from TMA01, 2005, Student C)

The benefits of netiquette during the early phases of the course align with the social identity model of deindividuation effects (SIDE) (Postmes, Spears, & Lea, 1999; Spears & Lea, 1992) where anonymity and newly formed groups create a greater social bond, due to the participants being unaware of their differences and therefore easier for the group develop as a whole. Rouke and Anderson (2002) however, argue that these social conventions (like netiquette) would have emerged to overcome the limitations of computer conferencing. Given the short period of time the students had to develop as an effective group, netiquette was a catalyst to the group performance.

Long term, netiquette had a negative impact on group processes as it conflicts with the clearly articulated underpinning pedagogy of constructivism which the course team were trying to foster. Online group work, which affords the development of constructivist learning, cannot ensure that the next stage of cognitive development takes place. Although some students commented that they had changed their views, this was not expressed overtly in the conferences, there was no recognition that this was achieved other than through acceptance, views were not contested. Fung (2004) attributes this passive approach to lack of time; however, I would argue that it was the influence of netiquette. Conrad (2002) talks of the silence "beneath the visible surfaces of participation, the net-her issues of conflict, captivity and compromise" (p210). Netiquette and the superficial congeniality this presents blocks the development of the cognitive skills through articulation of difference; conformity leading to apparent harmony (Mann, 2005)

Discussion

From the evidence, outlined above, netiquette had a long term impact on the group work process throughout the duration of the course. Superficial harmony was achieved, masking disquiet and apprehension which only emerged through rigorous interrogation of the mixed data source. The impact of netiquette goes beyond communication skills and the Alexander (2000b) principles of social conventions of computer conferencing; it affects the epistemology, the constructivist theoretic model, on which the course is built and social identity of the students involved. Gary Alexander, one of the founder members of the course team, outlined his pedagogic application of collaborative learning for the course:

On-line collaborative learning reduces this aloneness and goes well beyond it, with an educational basis rooted in constructivist models of the way people think and learn (Alexander 2000)

The online learning experience is enhanced through the discussion with peers and articulation of ideas (Tiene and Ingram, 2001; Pena-Shaff and Nicholls, 2004; McConnell, 2006) and provides the opportunity to engage in construction of knowledge through exposure to new experiences (Jonassen, Davison, Collins, Campbell, & Bannan Haag, 1995); drawing on Vygotsky's (1986) zone of proximity and the social interaction. Traditional, text based, distance learning cannot provide this without face to face meetings. Therefore the benefit of online group work is that there is **potential** for debate and critique, allowing the students to go beyond the knowledge and information presented within the course materials; narrative and the interpretation this involves supports the view that knowledge is structured as a meaning system, where by values, beliefs based on personal experience are challenged and transform understanding (Belenky et al, 1986, Mezirow, 2000). This requires active involvement rather than being a passive receptor of information (Cooner, 2005, Stahl 2005, McConnell, 2006). The application of social construct theory within the online learning environment affords active participation and interaction. The structure of the course offered students the opportunity to challenge their knowledge and articulate their argument through the active dialogue within the online conferences throughout the activities, online tutorials (OLT), provided by the course team. However for higher level cognitive skills to be developed it necessitates more than mere agreement and acknowledgement; to achieve constructivist learning requires exposure to disagreement and the potential for conflict, both seen to be thwarted by to the adherence to netiquette. Vygotsky (1986) argues that constructivist learning, through social epistemology, and cognitive development can be influenced and constrained by the social interaction. Provision of activities which afford constructivist learning are not sufficient to overcome the reticence of students who do not want to offend or do not have the confidence to defend their opinion. For non traditional learners from a didactic educational background, with little or no prior experience of group work, and who are novice learners within the subject area, discussion and expression of personal opinions is exigent in the public arena of the online conference. The opportunity to reflect within the tutor marked assignments (TMAs) did allow students to articulate their understanding and comprehension but this was not shared with others within the group, therefore reduced the opportunity for constructivist learning during the early stages of the course.

Interaction needs to be meaningful to support constructivist learning (Woo and Reeves 2007). Therefore the implications of netiquette, in part trivialising the interaction through measured responses, detract from the learning. For active participants, within this research, maintaining interaction was not problematic, however the depth of cognition evident from the conference transcripts could be seen to limit the development; a case of quantity over quality (Woo and Reeves, 2007). As Mason, (2000, p65) states "... for every gem of discussion, there were too many irrelevant or chatty messages"; whilst this contributes to the wellbeing and coalesce of the group, it detracts from the criticality and cognitive development. For some students the involvement of others was said to have contributed to their learning, this was evident from comments made in the ECA; however this was difficult to verify through the analysis process without specific examples. A cynic could interpret this as the student manipulating the assessment criteria, providing comment which is perceived as required rather than their reality; Open University students are acknowledged to be assessment driven (Mason, 2000). The participants within the research came to the course with a wide variety of experience and subject knowledge, assessing how much contribution to learning was made by others to an individual's learning is dependant on an understanding of the threshold concepts in the course, with no pre-entry requirement this was not known.

Salmons' (2004) Taxonomy of Collaborative E-Learning 1.0 would suggest the level of interaction was at dialogue level, where ideas are shared but assessment is on an individual basis – low level of trust. It was only during the last activity, which involved paired peer feedback and peer review of eBusiness proposals, that mutual critique and exchange of ideas became manifest. The timing of this activity, towards the end of the course, and the assessment structure, allowing one assignment to be substituted, meant that very few students took part in the OLT, limiting the benefits to the whole group. In the small number of assignments submitted scaffolding, the process where by teacher or another student assists development of new learning (Tiene and Ingram, 2001), was evident. What has emerged was not in accordance with Janet Salmons' (2004) taxonomy of collaborative learning: dialogue, peer review, parallel, sequential, synergistic, rather dialogue, parallel with a small number of students moving towards peer review, where they incorporate feedback into their assignment. By comparison with the popular Gilly Salmon's (2000) five stage framework for E-groups, stage 3 was achieved information exchange during most activities.

Active participation involves the giving and receiving of information, advice etc. This does not account for the learning involve in reading other students posting, sometimes known as lurking. When students reflect on their learning from others, this could be included but as one way transmission rather that participatory; vicarious interaction, which takes place through observation (Sutton, 2001)

For younger, confident students who are familiar with social networking and the vast array of electronic communication mode, netiquette may not have the same level of impact which it had on the three cohort non traditional learners. However, if the finding of the Leitch Report (2006) is to be adopted then increasing non traditional students will be participating in Higher Education, understanding how mature, adult learners adopt and accept guidance on communication must be understood.

Conclusion

Netiquette became part of the culture of the three cohorts during the first few weeks of the courses. This did not diminish after the assessment related activities had been completed and as such had significant impact long term on the group processes within groups. The influence of netiquette created a perfunctory sense of wellbeing within the groups, where superficially there appeared to be harmony yet underneath there are tensions which were not articulated within the conferences. This in turn reduced the potential to develop the cognitive skills of critical thinking through articulation of argument.

Netiquette had a positive impact on the groups during the early stages of the course when novice learners, both to online learning and higher education, were developing their confidence and trust in their peers. The continued adherence created a barrier, recognised by the students, to the further development and articulation of academic argument and constructive feedback.

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10 India Passenger Survey

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Introduction

In autumn 2008, a group of third year tourism students from Laurea University of Applied Sciences (referred to as Laurea) conducted an in-flight survey during two return flights to Mumbai. The purpose was to collect data from Indian travellers on board, i.e. to find out more about Indian travellers interests and experiences of Finnair (the Finnish national airline), Helsinki Airport and of Finland.

Our interest for Indian potential stop-over passengers developed out of an airport area AVIAPOLIS tourism development project that Laurea participated in. Through this project it became obvious that there is very little information on Indian travellers particularly in the airport area and generally in Finland. Moreover, the request of interest for Indian travellers was given to us by Finnair.

Indian travellers thus seemed like an appropriate group of travellers to study, not least also because Mumbai is a fairly new destination for Finnair (the route was opened for traffic in summer 2007) and as the market potential according to the Tourism Tourist Board. (Mäkinen & Hansen, 2006.) is huge. With more than 1.1 billion inhabitants and GDP increasing by more than 8 % every year, the country offers enormous potential for future growth in outbound travel. (Research Highlights, 2008.)

According to a market analysis made in 2001 by Travel International Research, the market potential is however, difficult to estimate. Their estimation is based on the fact that in 2001 there were about 320 000 Indians that earned more than 22 000 USD annually and as Indians oftentimes travel together with their entire family, the amount of "rich" potential travellers is estimated to offer a potential six times the amount of 320 000 outbound Indian travellers.

The purpose of this study, however, was thus to gain more information about Indian travellers' from the point of view of Finnair and Finavia (airport) and from the point of view of learning, i.e. to give our students the option to learn how to conduct a survey in practice by offering them the possibility of participating in a working life-based authentic project in which new knowledge is created stimulated by authenticity, creativity, research-basis, partnership and experience. (Raji 2007.)

The survey was conducted in October 2008 during two return flights to Mumbai by six Laurea students altogether out of which five students participated in the whole project.

In this paper I will describe the process, the learning, results and also propose a few arguments for this type of learning or as we at Laurea label as Learning by Developing. (Raji 2007.)

On defining the objectives

The first step in creating the questionnaire was to understand the requirements and interests of Finnair. They had a clear view on the type of questions they wanted to be included in the questionnaire. Some of us had hoped to conduct the survey in a more informal way through discussions and informal chatting with Indian travellers, but it became evident quite soon that Finnair had a fairly strict code of conduct on board and thus rather preferred a semi-structured multiple choice types of questionnaire which only gave us a limited space for open questions. Finnair was very helpful in providing information on their experiences with questionnaires in general and about Indian passengers and the Indian culture in particular. We met with Finnair staff three times and the students pre-tested the questionnaire at the airport prior to travel. We altered the questionnaire as a result.

Besides Finnair related questions, we also included questions on Indian's opinions about and experiences (if any) of Helsinki Airport and Finland. The questionnaire consisted of four categories: background information, Finnair Experience, Helsinki Airport Experience and Finland Experience.

On board; reported by Anniina Hakkarainen, Kristina Latova and Elina Lindholm

Our journey didn't start as planned because the flight was over four hours delayed. When we finally got to board it was already after midnight. Many of the

Indian people on board were thus in a bad mood which made our mission even harder. The cabin crew on the flight had been pre-informed on our project and had a rather positive attitude towards us and the project. They were friendly and helpful and did their best in finding the appropriate time for us to conduct our survey. They even let us do a short announcement in the cabin in order to prepare passengers on what to expect. We, the students ended up handing the questionnaires to Indians right after their first meal, within two hours from take off. The crew was flexible and understanding and they took an interest in our survey as did some of the Indians. The people we talked with were nice. Most of the people who answered were men and their command of English was usually good. Handing out the forms to Indians took about 10 to 15 minutes. Some of the respondents, however, refused to take the forms from us, and some just glanced through and gave the questionnaire back with no interest in answering. Some of the travellers were sleeping. To the ones who were keen on participating we told that we would collect the forms right before landing. Some of the Indians returned the questionnaires back to us themselves. On the first flight we collected 25 answered questionnaires. One challenge was to identify Indians among all travellers. Another one was related to the time of the flight. A third challenge was directly related to some apparent frustration due to the delay.

On the return flight everything went fine, the flight was on time and the crew helped us whenever we needed their assistance or support. We made a brief announcement again in which we told the travellers about our survey. There were even less Indian people on the plane on this return flight. We collected 18 answered questionnaires.

Results (student analysis)

Most of the passengers who answered the questionnaires (later referred to as passengers) were men (51), a minority were women (18). This may have to do with the fact that in the Indian culture the man is the head of the family. Although the majority who replied to our questionnaire were Indians, we also received some answers from other nationalities. Many passengers were born in India but lived in the UK and had British nationality. That is probably due to the colonial history of these two countries. Many passengers travelled with their immediate family, in many cases the purpose of the journey was leisure.

The majority of passengers were transit passengers travelling from Europe to India via Helsinki or vice versa. Many passengers had a transfer time from 2 to 5 hours, but some of them thought the waiting time was too long. This can partly

be explained by the delay or related directly to the fact that a number of transit passengers felt that there was no entertainment at the airport.

Surprisingly many passengers had bought their tickets from a travel agency. Important factors when purchasing an airline ticket / select an airline seemed to be: price, route plan, in-flight services, comfort, safety, reliability, flight and stop-over time. The passengers' experiences about Finnair's services were overall pretty good. "Was really pleased with the overall service and was a lot better than I thought. The first impression when I got on the plane was great and I would love to travel with Finnair again :)" (passenger reply)

The best grades were given to the service attitude of staff and in-flight entertainment. One reason for the good in-flight entertainment grades probably had to do with the fact that the aircraft type used on HEL-BOM route has personal TVs for every passenger. Shortly after this survey Finnair changed the aircraft type for the route and in the current aircraft there are no PTVs, so the passengers cannot choose movies anymore. Many passengers were dissatisfied with the food because they felt the food wasn't Indian (spicy) enough. "Airline is good but delays make passengers upset. And food should be more likely to be Indian, if you don't like food you should get to change it. That's it, the rest is alright." (passenger reply)

Many passengers also found the movie selection to be limited and poor.

A number of passengers were interested in doing business in Finland. This may have to do with Finland's reputation as a technology country. A little bit shocking was it though that so many passengers found the service in Finland to be poor!

Again, this can partly be explained by the delay in the first flight case.

As a gateway airport Helsinki got pretty good grades overall. The majority of the negative answers were given because of the delay, lack of information and entertainment.

"I was disappointed on Finnair: after a delay by more than four hours and not much information on what was happening" (passenger reply)

"There was no good entertainment at airport" (passenger reply)

Not a lot of money was spent at the airport which again may have had to do with the fact that most shops were closed.

Many passengers said they would be willing to leave the airport and get to know the surrounding area and its services (Helsinki sights, cultural events etc.) if they

had enough time before their connecting flight and the visa issues were in order. Some passengers that had gone out of the transit halls had bad experiences:

“I went out only to know the surroundings, but I will probably never do that again because I had many problems to pass the security check. They were too strict for a person who already passed a security check some hours ago.” (passenger reply)

In some comments passengers requested a direct connection from Helsinki to Chennai and Ahmadabad.

Most comments on Finland were good though: *Cost of living is very high! Taxi rental are unimaginable (very expensive)! But people are very friendly & speak English”* (passenger reply)

Development ideas, student suggestions

Students listed a few development ideas that they came up with based on the answers and their creative minds.

During the flight:

- Better and more current movie selection, for example Bollywood-movies
- Chargeable special meal services
- Virtual info about Finland, tourism and the destination in question
- Partially virtual announcements, they could be seen from the screens for example

At the airport:

- 24/7 virtual and entertainment services to passengers who are waiting for their flight
- Proper info-boards, for example in a case of delay

In November 08 Finavia opened a free wireless internet-service at the airport! (Finavia 2008.)

The new terminal especially for flights departing and arriving from Asia will be opened at Helsinki Airport in the near future. There will be a lot of new services in this terminal. (Finavia 2007.)

In the Aviapolis area:

- Flexible security and visa arrangements (mini-stop-over) for transit passengers
- Free time-, entertainment- and event-services for the passengers

Students self-evaluation on learning

"I learned many basic skills related to customer feedback processes, questionnaire design, about deconstruction and analysis. It was useful for me from the point of view of my thesis. Moreover I learned about Finnair and its operations. The trip gave me immensely, I learned about tourism education in India and surprisingly enough, also a lot about myself" (student 1).

"I learned mostly in this project about the culture in India. I have often wondered how certain stereotypes are so deeply embedded in us. The discussions with Finnair were fruitful and offered a professional arena for learning" (student 2).

"I have learned new things about India, about surveys as a methodological approach and about working life challenges" (student 3).

"The project itself was a diverse and challenging task and the operational part of it offered good possibilities for learning, as did pre-trip research and post-trip writing" (student 4).

"Already at the planning stage I learned a lot as the planning involved many official meetings at Finnair and Finavia which gave us the view of a different world. It also became apparent how much time and effort the questionnaire design takes. Our team-work was fabulous, we were a great bunch working together. During the operational part of the project we were given the possibility to travel. I for one felt that for the first time during my studies I did something concrete through which results and new knowledge was created, which were going to be useful for the future. I am really proud of the whole project and for the possibility of networking with Kuoni Academy of Travel. The culture shock in Mumbai was immense, but the Indians and the Indian students made the trip very rewarding" (student 5).

Feedback on report (Finnair, Susanne Heikkinen)

Overall comment was that the report provided by students was clear and written with a good command of English. The results were presented satisfactorily.

Finnair would have expected some more depth in the analysis of the open comments and on students possible observations on board; e.g. did the Indians watch several movies, how did they seem to perceive food, service related to drinks etc. It also would have gained Finnair had the students been able to distinguish between the passengers on board the delayed flight and the other passengers. During meetings students were perceived fairly active, however there could have been more questions and talk. Students could also in the beginning of the project had been more active in collecting information on the country, its culture, customs etc.

In the presentations the students could have commented more on the atmosphere on board, subjective experiences, observations etc. All in all, however, this was a good project.

Conclusions

The students earned 10 credits for this in-flight survey project that lasted from April 2008 until February 2009. The earned credits involved the following phases and stages:

1	ects: the design and testing of the questionnaire
2	ects: data collection on board flights: Helsinki-Mumbai-Helsinki
1	ects: Finland presentation in Mumbai at Kuoni Academy of Travel
2	ects: the analysis of data
1	ects: the writing of a 20 page report
1	ects: presentation of results at Finnair, at Laurea's r & d-meeting, at the conference
1	ects: media report
1	ects: self evaluation

As the responsible teacher I had the opportunity and joy to follow through all stages of this project even though the students and myself were very much in this together, as was Finnair. It seemed that many of Finnair staff had heard of our project and greeted us with warmth when we came to our meetings to their headquarters. It was a new and an innovative way of collecting information and creating new knowledge both for them and certainly for us. Originally it was the students idea to dig deeper on Indian travellers. They themselves came up with the idea on flying to India to search for data in an authentic environment. I pre-

sented our project idea to Laurea's r& d-department who kindly gave us some funding that enabled us to go through with this project. We learned in this project about and from our team-members, about professional codes of conduct, about ourselves, about another culture in an authentic environment, about Indian passengers, about our national airline, about survey as a method for research, about analysis and reporting. The key words for learning in this project consisted of thrust, professional attitude, team-work and genuine interest. We learned in an authentic environment, together with professional and committed partners in a creative interactive spirit or as Saara put it: "for the first time during my studies I did something concrete through which results and new knowledge was created, which were going to be useful for the future".

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11 Once you've tried it, you won't go back! - Studying a BBA Degree Via Running And Developing Your Own Business at TAMK ProAcademy

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Abstract

ProAcademy at TAMK University of Applied Sciences is a special unit in entrepreneurship studies for BBA students. We have completely left behind traditional teaching methods such as lectures, assignments and exams in favour of student- and team-centred learning tools such as dialogue, knowledge-creation sessions, innovation cases, learning cells, portfolios, coaching, working-life seminars, reflective essays and real-world paid-for customer projects. New students set up cooperative companies in teams of 15-20 people when they start at ProAcademy and all learning is integrated into developing the company, the team and the students themselves with appropriate goal-oriented tools. Teachers have been trained to become coaches and they challenge and support the students in the learning process. The outcomes of empowering students to take full responsibility of the direction of their own personal and professional development and become a team entrepreneur in the process have fundamentally changed the way we think about meaningful learning.

Background

ProAcademy is a multi-disciplinary business unit at TAMK University of Applied Sciences. Our activities are based on working and learning together, applying

latest theoretical knowledge and generating new knowledge. ProAcademy operates independently under the administration of the degree programmes in Business Administration and Business Information Systems.

Students are studying for a 3,5-year Bachelor's degree of which the last 2,5 years are spent at ProAcademy. The first year provides a common foundation of skills and knowledge in business or information technology (60 ECTS). During this first year students interested in entrepreneurship and the way of learning at ProAcademy apply for, are interviewed and then selected into two new teams. Starting from the beginning of the second year of studies, students study at ProAcademy full-time with the exception of language courses and 1-2 professional studies modules for the IT students, which are carried out on the main campus.

There are currently 4-6 teams or 60-90 students studying at ProAcademy with the oldest teams always graduating in December. Our intake of the first-year Business Administration and Business Information Systems students is around 25 % yearly. Currently nine teams have graduated since the founding of ProAcademy in 1999.

ProAcademy is located at TAMK's Finlayson campus with the School of Art and Media. Finlayson district is an old historical area at the centre of Tampere where old factory buildings have been converted into modern offices, museums and multi-purpose facilities. ProAcademy operates in two floors: there are offices for the teams and the coaches plus a conference room on the first floor and two team session rooms with a small kitchen and coffee tables on the second floor. Team session rooms are adaptable to various purposes such as dialogue discussions, workshops and seminars. The nature of facilities and physical surroundings is extremely important because a learning environment like ProAcademy cannot function if the structures define how the process works (as in classroom teaching). Surroundings must be dynamic and adaptable allowing the process to define appropriate use of the facilities. This is also a question of credibility with the paying customers who are interacting with our entrepreneur students. It is a different thing for a paying client to come for a meeting at a conference room or an office compared to a classroom at a university building.

ProAcademy is founded based on the ideas of Team Academy at Jyväskylä University of Applied Sciences (JAMK) and both units share most of the learning tools, a very similar learning environment and fundamental thoughts about team learning, coaching and what learning should be about in general.

Learning environment

Theoretical background and supporting processes in action

ProAcademy uses a combination of pedagogical, organizational and leadership theories to create an environment where dialogue and brainstorming generates new ideas. These ideas are acted on and tested with customers. The results are evaluated and summarized, which creates new shared knowledge. This knowledge will again be used to refine processes and to produce new ideas.

Fundamentally this cycle is about learning-by-doing and Kolb's (1984) theory on experimental learning where concrete actions are observed and reflected, abstractions are made and then tested in new situations. However, this view to learning-by-doing puts very little emphasis on the social construction of knowledge and what actually happens in the learning process. Also, it does not provide concrete tools for idea generation, reflection and conceptualization that keep the cycle in motion.

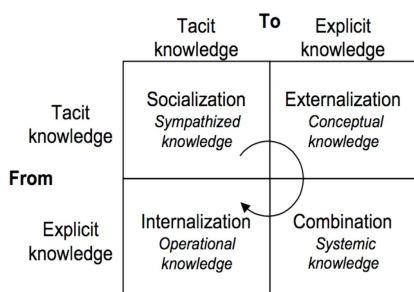


Figure 1. Knowledge conversion process from tacit to explicit knowledge.

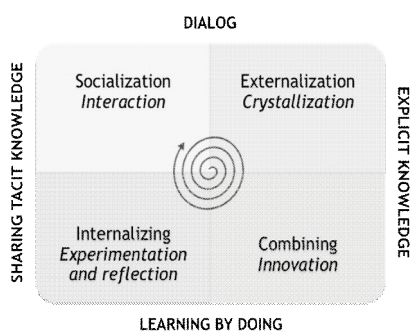


Figure 2. Knowledge conversion process or "knowledge spiral" with support.

Nokana and Takeuchi (1995) have extended the idea of this learning cycle to include the nature of knowledge and other learners in the process in Figure 1. There are two kinds of knowledge that accumulate in formal and informal learning processes. Tacit knowledge is internal knowledge that the learner builds from experiences, current reality and actions in a specific context. It can be difficult to formalize and communicate with others. Explicit knowledge is conceptual by nature: generated by rationing, past memories and theoretical knowledge. It

can be easily expressed, captured, stored and reused but it may be difficult for the learner to apply explicit knowledge in action.

In an effective learning process, tacit and explicit knowledge must flow seamlessly by sharing and conversion:

- tacit knowledge can be shared with socializing with others,
- tacit knowledge needs to be externalized and processed so it can be presented and shared more effectively as explicit knowledge,
- explicit knowledge can be augmented by sharing and combining different theories and sources of information, and finally
- explicit knowledge needs to be converted to tacit knowledge through internalization so it becomes part of the learner's practical skills.

Nonaka & Takeuchi's model emphasizes a very critical point in organizational learning: we need processes and tools supporting the motion of this cycle continuously. Students constantly gain tacit knowledge by living, working and experimenting but this represents an informal learning process, which is unpredictable and typically doesn't follow topic and scope boundaries of courses in traditional education. Tacit knowledge is often deemed subjective and unreliable thus not worth sharing or discussing. Often even the learners fail to realize that they've learned something.

Figure 2 shows some of the most important tools and processes that support this cycle. Socialization of tacit knowledge is supported by interaction between the learners. Once it has been established what we've learned from our experiences and tacit knowledge, we try to conceptualize or crystallize it by forming summaries and theories about generating explicit knowledge. Externalization also allows us to evaluate the subjectivity or reliability of the knowledge, as the explicit formulation should be something mutually agreed on. By combining different sources of explicit knowledge, e.g. reading books, newsfeeds and blogs, attending seminars and comparing, applying and refining own theories, new explicit knowledge is created. This knowledge needs to be tested again in real-world cases and projects, bringing us back to reflection and discussions of the internalized experiences.

At ProAcademy the most important tool for reflecting on experiences, developing new ideas and concepts, and sharing insights is dialogue in team sessions. Team sessions are held twice a week for four hours and they are organized in a circle with comfortable chairs and no obstructions (for example tables) between participants. The purpose of the *dialogue* is to expand our thinking by coming up

with new perspectives, alternative ideas and deeper understanding instead of *discussion* where the goal is typically to make a decision and to narrow down from the ideas that we have (Isaacs, 1999). The key parts of a good dialogue are careful listening, respect for all thoughts, waiting for others and talking openly and straightforwardly.

When the dialogue has opened and expanded on the topic and a shared foundation of knowledge has been established, the team focuses on the key insights. Typically this is done on the flip board or projector and different frameworks can be used to structure the thoughts. For example, all completed projects and many learning sessions are analyzed with a tool called *motorola* (Waterman, 1994), which guides the students to come to essential conclusions about the subject with four simple questions:

- What went well?
- What can we do better next time?
- What did I learn?
- How will I take what I learned into practice?

Motorolas are typically prepared individually but then shared with the team providing for further discussion.

Team sessions also host innovation or “birth-giving” sessions where students prepare and lead activities that respond to a learning need in the team. The students organize these sessions in groups of 2-4 where each student has for instance read a difference book or other source regarding the topic. In the sessions key findings are shared with the team and activities are used that require the team to apply the knowledge in new contexts or analysing different cases. These are examples of combining different sources of explicit knowledge to generate new knowledge that the team can use to further develop leadership practices in the team, company's marketing strategies or their products for example. Students and the coach evaluate birth-giving sessions based on how sources and theoretical background was used, how much the session activated the participants, how intense or memorable it was as an experience, and how well it can be applied into practice. A *motorola* is also compiled for the session's feedback discussion.

Finally, all the ongoing projects and development of the company, leadership and team organization account for the experimentation, reflection and learning-by-doing part of the Nonaka & Takeuchi's cycle. It is very important to realize that this cycle is at the core of all learning at ProAcademy. It is the way people

really learn in life and we need to understand and accept that learning this way takes a lot of time. Nothing is given ready-served for the students to ingest and memorize. The skills, competences and knowledge that students at ProAcademy accumulate in the 2,5 years are a result of countless dialogues, motorolas, books, innovation sessions, projects, mistakes, successes and experiments.

There are no short-cuts to learning but this doesn't mean that everything outside the first-year foundation studies, books and seminars - all the practical knowledge - needs to be experienced, stumbled upon or learned via mistakes. New teams constantly learn from the older teams with regard to projects, customers, products and accounting for example. We have a open-door policy, so whenever possible, all office doors should be open for anyone to enter, ask questions, chat and get to know each other better. A lot of information is shared informally in hallway discussions. Every month a Projector meeting is held where all teams share motorolas, latest developments and things learned from their ongoing projects, team dynamics or other things that may help the other teams. The ProAcademy board also meets twice a month with business leaders of all teams, head coach and student co-coaches. All ProAcademy's own yearly projects that are passed on to new teams typically have a senior project manager and members from the new teams. Steering committees are assembled for some major projects with senior students, coaches and customers' representatives to guide the project manager and team. Teams can also consult the lecturers on the main campus and use their own or the coaches' networks to get support from working professionals.

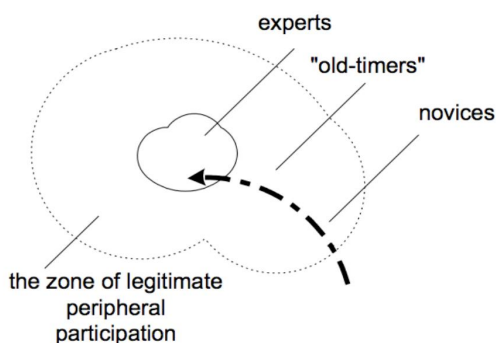


Figure 3. Community of practise and zone of legitimate peripheral participation

This process is illustrated in Figure 3, which combines Vygotski's (1978) original idea of zone of proximal development with Lave & Wenger's (1991) concept of legitimate peripheral participation and community of practice. The idea of community of practice comes from Lave & Wenger's research into tailor apprenticeships in Africa where new apprentices were introduced into a community of practitioners through a "structured pattern of learning experiences without being taught, examined, or reduced to mechanical copiers of everyday tailoring tasks, and how they become, with remarkably few exceptions, skilled and respected master tailors". Lave & Wenger emphasize that the learner is an active participant in the social community and constantly increases involvement towards the core and full participation leading to empowerment of the learner in the process.

Related to this Hildreth & Kimble (2002) raise a question concerning Nonaka & Takeuchi's knowledge conversion spiral whether tacit knowledge can actually be made explicit as in some cases it is impossible to articulate and can only be transferred via apprenticeship. They conclude that in such a case immersion in the apprenticeship with the mentor or old-timer actually generates the sought-after tacit knowledge even if the masters are unable to articulate or share it. Thorpe (2002) uses the concept of communities of practice from the perspective of collaborative learning to describe how old-timers scaffold the novices' learning process so the "learners can operate in the area beyond their immediate capability, in a context of guided practice. Having achieved mastery, they become able to operate independently and can take the next step forward, again into territory just beyond their immediate independent capability." The idea of personal mastery and a supporting environment is also strongly emphasized by Senge (1990):

Many of the practices most conducive to developing one's own personal mastery – developing a more systemic worldview, learning how to reflect on tacit assumptions, expressing one's vision and listening to others' visions, and joint inquiry into different people's views of current reality – are embedded in the disciplines for building learning organizations.

Previous points can be clearly seen in our coaching and entrepreneurship education program, which we organize as part of our Voimala -project. Voimala is a five-year program funded by the European Social Fund to renew the education system, promote entrepreneurship and establish new practices in the Pirkanmaa region. We organize courses in entrepreneurship for students and coaching training for teachers in the region's secondary schools and higher education institutions. Fundamental idea in all these courses and training sessions is to use

our learning methods and environment instead of classroom settings and to have one of our student entrepreneurs as an assistant coach in all sessions.

This creates an effective master-apprentice setting where our students who are interested in coaching as their professional career can learn from our coaches and handle challenging situations with secondary school youngsters and teachers or lecturers in the coaching sessions. Our senior students or hired graduates organize a coaching training program every spring for the new assistant coaches before new courses begin in the autumn and the full-time coaches are used as experts or mentors in the program. Assistant coaches are given the responsibility of coaching the students' real-world projects, which are always part of the entrepreneurship courses, and they are also expected to prepare and take active part in the dialogue sessions on the courses. These are good examples of situations where at least initially the assistant coaches operate in an area beyond their immediate capability but supported and following the coaches, they learn to manage and guide the process. These training sessions are also invaluable in gaining the tacit knowledge about coaching in practice, which is in many cases impossible to articulate and share effectively.

Communities of practice also reify or concretize their existence with artefacts – tools, stories, language and documents – that are result of participation in the community (Wenger, 1998). These effectively create the culture, which sustains a unit like ProAcademy where the members of the community change every three years. Our tools of learning fundamentally change the meaning of life-long learning for our students and many use the same methods later in at their workplaces or own enterprises. Stories of great personalities, disastrous projects, mistakes with the clients, excursions, retreats and great parties are passed down from team to team strengthening the sense of belonging. Many of our tools, events, awards and practices are named in a language that cannot be understood by others without explaining. Posters and photos of events cover our walls, and students use social networking tools and blogs to share our experiences to a wider audience. A marketing team composed of our students is responsible for developing our own brand, marketing ProAcademy to businesses in the region and organizing campaigns to get good candidates to apply for ProAcademy also reifying our existence.

Individual, team, company and community in perspective

Learning takes place in four contexts at ProAcademy. At the individual level students regularly set and update personal learning goals and then work towards

them by reading books, taking part in projects and seminars, collecting and reflecting on feedback. But learning and studying alone is a slow process, which can easily lack alternative point of views and insights generated in dialogue with others.

Learning in teams speeds up the learning process if the students are given the tools to realize their potential and the benefit they get from sharing what they've learned and generating new knowledge with others. Traditional group work or teamwork at schools or universities often focuses in separate assignments or projects where the students share very little apart from the goal of getting the assignment completed. This often leads to problems with freeloaders and fulfilling external requirements that are given for the assignment. The team needs more to become a truly meaningful unit for its members.

At ProAcademy, the team company is the tool to focus and motivate the team to pull together. Starting from the first week the team spends together, they need to organize themselves, devise strategies and develop products they can sell, contact clients and work together in projects to make their company financially sustainable. They need to share their own goals, shortcomings and qualities that need development with the team, so that the team helps everyone to grow professionally and as a person. This requires a lot of trust in each other and humbleness to open their own opinions and decisions to the team's collective decision-making.

A team cannot survive alone. Students need support and guidance from the coach but also from fellow and senior teams. Teams form a community and the community needs shared values, vision and mission. These are created together by the coaches and representatives from the teams. Leadership is needed to ensure all teams are working towards a common vision with accepted values. Head coach, assistant coaches and business leaders of the team companies form the ProAcademy board, which makes the important decisions affecting all teams, for example agreeing on the shared values and vision.

Learning tools

Most important learning tools on the individual, team, company and community contexts are outlined in Table 1. On the community level students organize learning cells and workshops across team boundaries around a particular topic they want to learn more about. They agree on books that they will read for the sessions and study deeper into a topic as they otherwise could alone or with the whole team present. Some workshops are also organized yearly by the coaches

based on their field of expertise; for example workshops in leadership, marketing, accounting, information technology and sustainability. These workshops aims to change and develop practices and processes at ProAcademy and to deepen students' professional knowledge in an area where they want to focus. Teams are also responsible for organizing monthly seminars, Projector-sessions, guest speakers and other events aiming both for professional development and community spirit.

Table 1. Summary of learning tools in different contexts.

Community	<ul style="list-style-type: none"> • Learning cells and workshops • Seminars (e.g. Projector) • ProAcademy projects and events • Peer-feedback
Team company	<ul style="list-style-type: none"> • Client projects and feedback • Sales, customer acquisition and networking • Budgeting • Product development • Innovation assignments
Team	<ul style="list-style-type: none"> • Dialogue • Innovation sessions • Feedback discussions • Team building and development excursions
Individual	<ul style="list-style-type: none"> • Learning contract • Performance reviews • Reading and essays • Portfolio • Personal coaching

Projects

Development of the team company and associated learning is naturally dependent on the projects students do with customers and how they collect and react to feedback about them. Most projects are contracted through the student companies to businesses in the region and some projects are also completed for TAMK or ProAcademy. Nearly all client projects are revenue generating and student companies have full freedom and responsibility regarding decisions on the use

of the company's income. Coaches or the university are not legally connected to the student companies or projects in any way but students can naturally ask the coaches for support and opinions, as they are responsible for the learning process.

Topics of the projects vary greatly according to the needs of the clients and skills and interests of the students. Common examples are sales and marketing campaigns, events and seminars, graphical design and web productions, marketing research, promotions and training sessions. Studies at ProAcademy begin by founding the company during the first couple of weeks and then students need to do market research and find niches to develop products they sell. They need to price their work and network with customers and partners to ensure a sustainable cash flow. A project plan and project report is required for all projects.

Students don't typically take loans for the company or the projects. They start with service products that require little or none starting capital and then build up their products and projects with income funding. Teams' innovativeness and capability to work together as a team is tested in 12- or 24-hour innovation assignments, where they need to complete customer cases in a very short time period. Innovation skills culminate in the final exam, 24-hour innovation, consisting typically of 2-3 business cases given by companies in the Tampere region. The team must complete and present their solutions to the customer in 24 hours after they have received the case. They will be evaluated and paid accordingly by the customer.

Teams' learning tools

On the team level most important tools of learning are dialogue, innovation and birth-giving sessions and feedback discussions. Birth-giving sessions are a variation of the innovation sessions and typically take place in the team sessions or team retreats. 2-4 students prepare to lead a session for the rest of the team by reading related books or other sources of information. The goal of the birth-giving session is to create new knowledge or practices that the team can use immediately, for example new business concepts, marketing campaigns, new working processes, leadership strategies, etc.

Learning to give and receive appropriate feedback is one of the most important skills in working life and this is practiced in feedback circles roughly every three months in team sessions. In a feedback circle everyone in the team gives positive and constructive feedback to every member of the team. Teams also complete an electronic peer-evaluation twice a year about the development of pro-

fessional skills of the team members. The results are also discussed in the feedback discussions. Teams also evaluate the stage of development of the team as a whole and roles of people in the team using various tests and trying to take advantage of the different qualities and strengths of team members.

Individuals' learning tools

For the individual student the most important learning tools are learning contract, performance reviews, reading and essays, personal coaching and portfolio.

Learning contract (Cunningham, 2004) is used to structure thoughts, add self-awareness and create goals for learning. It also serves as a tool for the rest of the team to align their common goals and to create trust when the learning contracts are shared in team sessions. In the learning contract students reflect on the following questions:

- Where have I been?
- Where am I now?
- Where do I want to get to?
- How will I get there?
- How will I know if I have arrived?

These questions help the students to make sense of their past experiences, what kind of people they are currently, what are their strengths and weaknesses, what are their long-term and short-term goals, what are their learning needs towards those goals, what do they have to do to achieve their goals and how do they know when they've reached those goals. The learning contract is a living document and it's updated at least twice a year for the performance review discussions with the coach.

Reading books based on a list of recommendations (Partanen, 2008) is critical for the development of professional knowledge. The list covers over thousand recommended books across topics of learning, team building, entrepreneurship, leadership, marketing, innovation and personal growth, each rated according to how demanding the book is in book points (1-3 points per book). One book point equals eight hours of student work. Students are required to write a reflective essay on each book they've read focusing on what they learned from the book, how it reflects to the team or the projects, and how they can apply what they learned. The format of the essay is completely free though most are traditional paper essays.

Portfolios are used as an external representation of the students' personality, growth and skills, which they can use in selling their work for companies during studies at ProAcademy and applying for jobs after graduation. Evaluation criteria for the portfolios are creativity, personality, personal development, goal-orientedness, work samples and customers' point of view. Every autumn coaches, co-coaches and an external recruitment specialist evaluate all portfolios. Best ones are awarded and everyone receives feedback on good selling points in the portfolio and how to develop it further.

Personal coaching is the final component to the individual's learning process. The coach needs to encourage the students to take on new challenges, help them find good sources of information for their learning needs, commend and praise on achievements and give constructive feedback then they're underperforming. Coaching at ProAcademy means being an expert in the learning process. The coach is not expected and should not have answers to all questions. Listening, reflection, reviewing, summarizing and asking questions should be the coaches' primary tools instead of giving instructions or advise (Downey, 2004). Coach must have great belief in the capabilities of the team members and lead them to lead themselves by guiding the process and giving empowering tools. To achieve all this, the coach needs to be present and spend a lot of time with the team also outside the team sessions.

Structure of studies

A learning environment such as ours can be difficult to organize in a university setting where the structure of degrees, courses and modules is often very strictly defined. We have solved this problem with our host degree programmes by creating custom modules that are accepted as a specialization in professional studies for the Bachelor's degree. These modules don't have specific periods or starting and ending dates. Instead students log every hour of work or studies at ProAcademy into their personal study plan online.

Logged hours are categorized into team sessions, innovation sessions, projects, seminars, workshops, learning cells, reading books and development of

ProAcademy. In seminars, workshop, learning cells and books, the hours are further categorized according to the topic so that the professional studies reflect the ratio and focus of students' studies for example between marketing, leadership, accounting and business information systems. When enough hours have accumulated in particular categories, the coach marks study modules completed in the study register.

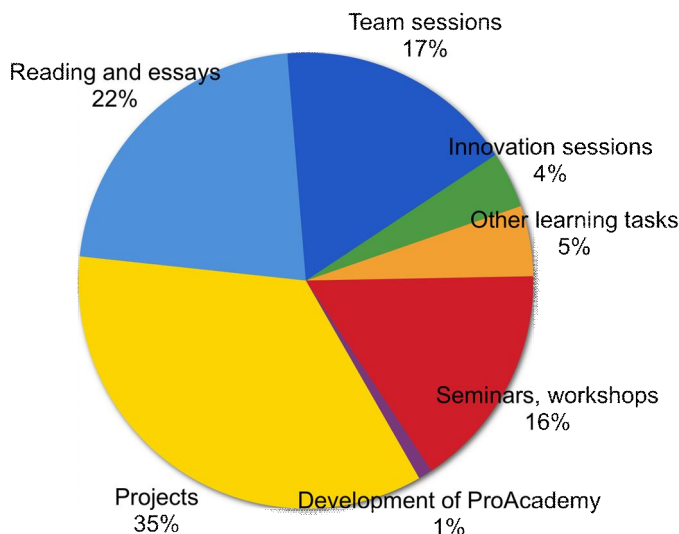


Figure 4. Distribution of logged hours in the personal study plan (100 % = 3067 hours)

Distribution of all hours Business Administration degree program students need to log during the 2,5 years at ProAcademy is shown in Figure 4. Projects account for 35 % of the studies. This is achieved by carrying out internship in the students' own businesses. Reading professional books accounts for second biggest part, 22 % or 85 book points. In practice this means that every student reads on average 50-60 books during their studies at ProAcademy. Furthermore, as the team shares many of the insights they've learned from the books in dialogue or birth-giving sessions, students will have been in contact with knowledge from over 200-300 recent professional books when they graduate. Team sessions account for 17 % of the studies at ProAcademy. That is 530 hours, which gives some perspective to how much time is needed to share knowledge and create insights via dialogue and team activities. Seminars, workshops and learning cells account for the final major part, 16 % or 480 hours. This part also includes some eLearning courses for example in project management.

The final thesis is written according to TAMK's general final thesis instructions. The thesis follows general guidelines for scientific work including the use of background theories, proper referencing and summarizing or modelling outcomes. The topic itself should be a practical project carried out with a real client. Final thesis is completed individually or in pairs.

The Bachelor's degree that students receive on completion of the studies is comparable to the corresponding degree from the traditional business degree programs and any other European Bachelor's degree allowing the students to continue their studies on the Master level.

Results

There are many ways to look at the outcomes of our program. We can look at the dropout-, graduation-, entrepreneur- and employment rates, portfolios, competences, networks of customers and contacts that students have and alumni's activity. Nine teams have graduated from ProAcademy so far. The dropout rate has been low; typically only 1-2 students resign per team and return to the traditional degree programs. Graduation rates have been very high because the team takes care of and motivates everyone to graduate in time; once the team graduates, there's nothing left for students who have delayed their graduation for any reason. Approximately 95 % of all students have graduated latest by the spring following official graduation day in December. Historically about 20 % have continued as an entrepreneur after graduation compared with fewer than 5 % of all university graduates in Finland. We are working in raising this number much higher, and progress with the current senior teams is very promising. The rest have also been employed well.

However, those general statistics tell very little about the results of our learning environment and students' achievements in our everyday practice. Figure 5 illustrates what projects one of our team companies, Seepramedia, did in 2008: more than 30 projects and many more customer contacts. These projects consisted of seminars, events, web design, innovation assignments, marketing, electoral campaigns, publishing and promotions. Largest project was the summer job recruitment fair in February, which had over 10000 visitors in one day. In August two limited companies were born out of Seepramedia. Together these companies generated a turnover of approximately 120 000 €.

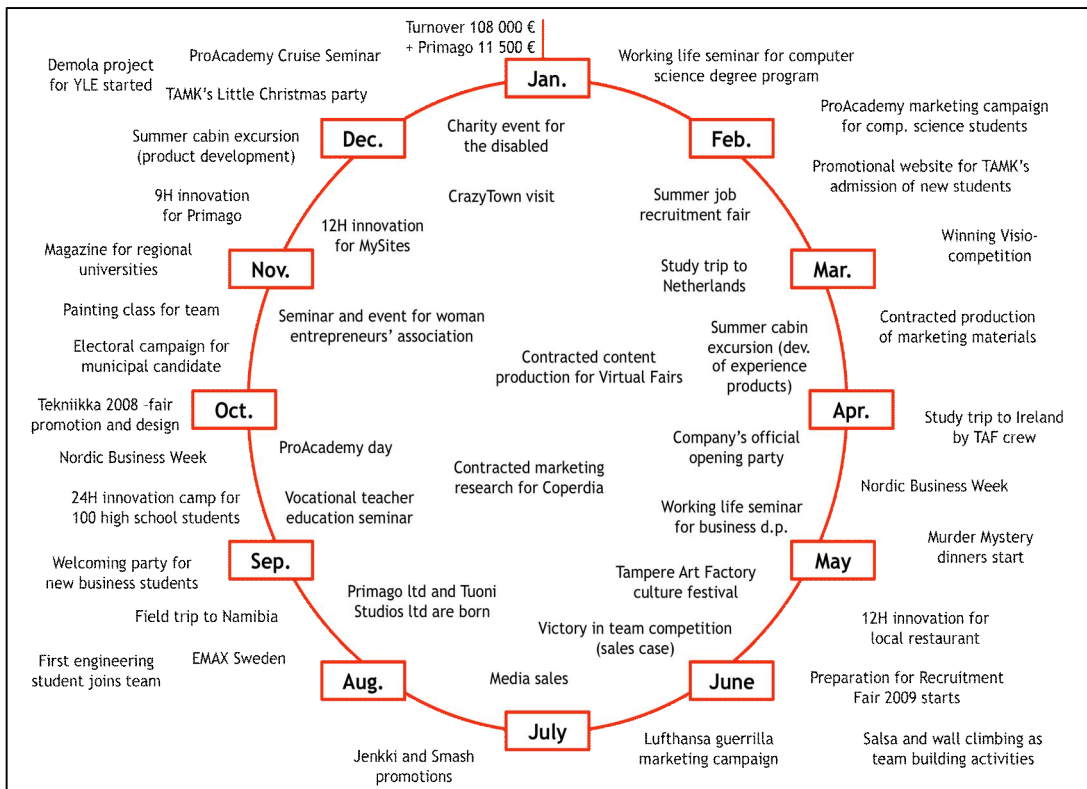


Figure 5. Projects of 2008 for Seepramedia team company.

Putting this into the studies' perspective, all these projects should represent only 35 % of the time students spend at ProAcademy leaving rest of the time for other learning tasks. It's fair to say that Seepramedia team members worked a lot of overtime on these projects last year. Yet, to link this to the whole picture of learning-by-doing and sharing experiences, successes and mistakes with all the teams, we must remember that there are always 4-5 other teams with an equally impressive set of projects bringing the total to over 100 projects per year. That's a lot of action, reflection, learning and energy.

Concluding remarks

ProAcademy is a special unit in entrepreneurship studies at TAMK University of Applied Sciences. We lead a very hands-on approach to learning about business, leadership, marketing, innovation and business information systems. In-

stead of lectures and exams, the learning process is facilitated by coaches, latest professional books and tools and theories relating to organizational and situated learning. Students set up a team company in the beginning of their ProAcademy studies and integrate their learning needs to support the development of the team and a sustainable company.

Our approach enables us to use learning-by-doing philosophy throughout in a long-term and goal-oriented process where the journey is often more important than the destination. Students have great freedom and responsibility in setting themselves meaningful learning goals. We develop, follow and reflect these goals in performance reviews, learning agreements and feedback discussions. Various tools are also used to generate new knowledge in dialogue and innovation sessions, and to share this knowledge with the community. The ProAcademy teams work on over 100 projects a year with paying customers. This creates true working life competences, which can't be attained by sitting in classes or measured by exams.

ProAcademy has been using this learning environment and these learning tools for almost 10 years now and they have transformed both our students and coaches. Seeing the personal growth and development in the students, the energy that drives them forward and the real effort they show in supporting their team members achieving their goals, it is clear to us, that there's no going back to traditional educational system.

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12 Elasticity of Research Objects as of Great Concern to Innovative LbD Projects. Case: SATERISK

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Abstract

Innovations are vital for the Finnish economy and society. Over the past few years it has been discussed and written about how the foundation of Finland's future welfare and economic growth is based on an organisation's renewal and innovation capabilities. Laurea University of Applied Sciences operates in the Helsinki metropolitan area, one of the most competitive regions in the world. Laurea's strategic choice is to implement, develop and use Learning by Developing (LbD) as an operational model in order to contribute to the growth of the region around. Laurea's aim is to be a fully authorized and international University of Applied Sciences participating in service innovation activities. But how a higher education institute, such as Laurea, could best support innovation capabilities, and are there any theories behind organisation's innovation capabilities?

SATERISK research project, born in Laurea, aims at a situation, where laws about positioning and tracking and the financial risks posed by their usage will not prevent the use of machine to machine (m2m) tracking across state and union borders. The project is projected to bring new, international level know-how to the Finnish security field. The project will also create new methods and development paths for the Finnish positioning and tracking system development field. Positioning and tracking are used for increasing productivity and security. The widely used United States based Global Positioning System (GPS) satellite positioning system will soon get a European Union counterpart and rival from the Galileo satellites. While the satellites are still on the ground, it is important that any problems and possibilities that are related to the new system be charted. The project also aims to offer technological solutions to issues that rise while the

project is ongoing. The project also includes a separate law-related work package, which looks at the complicated legal issues that arise with the use of the Galileo system for tracking and positioning. These are studied on many levels: international, European and national.

This article shows, how the whole SATERISK research project shapes up within a LbD process: The research idea was born within a student group; it developed within dialogs with students and teachers; and during dialogs among value networks (e.g. students, teachers, researchers, companies, government officials) it evolved into one of the major research projects funded by the Finnish Funding Agency for Technology and Innovations (Tekes). The case study also researches, how SATERISK's shaping process fulfils the models of innovation capabilities.

Introduction

Countries around the globe are creating distinctive innovation models and placing innovation at the top of their national agendas. Many countries around the world are designing novel approaches to innovation strategy, and are creating forward-looking education and talent-development policies, pouring money into large-scale initiatives and snapping up new assets in the form of intellectual capital and infrastructure. (Kao 2009.)

Finland has strong technology know-how, especially in information and communication technologies (ICT). Finland is on the top level of innovative culture and performance. European Innovation Scoreboard (2007) ranks Finland third out of 37 countries, after Switzerland and Sweden (see Figure 1). In the future, Finland is increasingly dependent on the reinforcement of its innovation capacity. Universities of Applied Sciences constructively form a new and increasingly important factor in the Finnish innovation system. Today, more and more of innovations grow within the service sector.

Laurea University of Applied Sciences operates in the Helsinki metropolitan area, one of the most competitive regions in the world. Laurea's strategic choice is to implement, develop and use Learning by Developing (LbD) as an operational model in order to contribute to the growth of the region around Helsinki, as well as to provide employability benefits to its 8000 students. According to the Finnish legislation, universities of applied sciences have three tasks to fulfil; (1) education, (2) research and development, and (3) regional development. By utilizing LbD model, Laurea can integrate these three statutory tasks. Laurea's aim

is to be a fully authorized and international University of Applied Sciences participating in service innovation activities. (Pedagogical strategy 2007.)

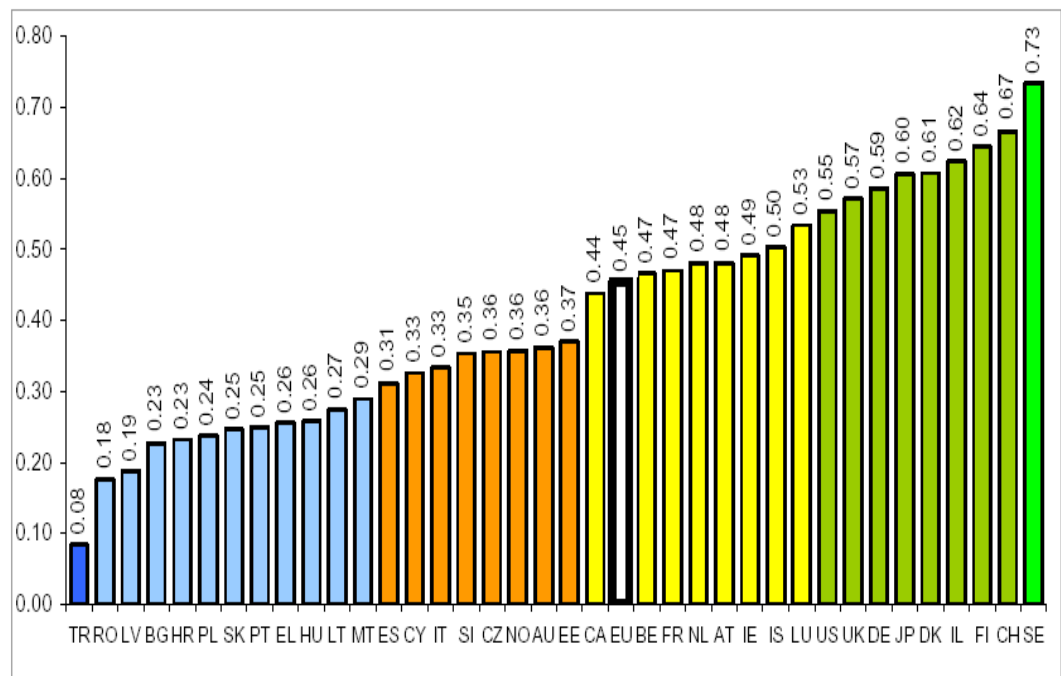


Figure 1. The 2007 Summary Innovation Index (European Innovation Scoreboard 2007)

Research Methods

In this case study, different innovation capability models are researched from written material. From them after competition, two models are selected for closer look. A theory-testing approach (Järvinen 2004, 36-65) is used, which tries to answer the question: Does a particular model describe a certain part of reality? In this case, does our case study confirm or falsify the selected innovation capability models? Within theory-testing approach, Lee's case study method (Lee 1989) is selected, because it presents how a single case can be used for theory-testing purposes.

Theory-testing Case Study

Lee (1989) present four problems of case studies: (1) making controlled observations, (2) making controlled deductions, (3) allowing for replicability, and (4) allowing for generalizability. He shows how these problems will be solved with management information system case studies and recommends four questions for the theory-testing case study approach: **(1.) Empirical validity:** Does the case study confirm the theory through empirical testing? **(2.) Relative predictive power:** Does the case study rule out rival theories? **(3.) Logical consistency:** Are all the predictions considered consistent with one another? **(4.) Falsifiability:** Does the case study consider any predictions through which the theory of interest could be proven wrong?

Data Gathering Techniques

The following data gathering techniques are applied in this study: The author has read written material on innovation capability models. He has also interviewed the creator of one model. With regard to the case, SATERISK, information has been collected by interviewing The Project Creators, two prior students from Laurea University of Applied Sciences. The author has also made his own observation when acting as the scientific manager for SATERISK project.

Theoretical Background

Management Model of an Organisation's Innovation Capabilities

Researching the demands for a national sense of necessity to excel in the field of international innovation development has led to developing a "governance of organisational innovation capabilities", shown in Figure 2. The model is based on existing theories and management doctrines, and empirical studies. According to Yliherva (2004), the design embodies fields of know-how which can improve the organisation's innovation capabilities. The fields of knowledge consist of companionship and collaboration, knowledge of network skills, mastery of innovation acquiring processes and knowledge of using innovation stimuli. By developing these skills, the organisation will have a better chance of achieving development in productivity and benefiting intangible capital, and the organisation could evolve and control its innovation capabilities. The governance consists of measuring methods and indicators which are connected to existing management

and reporting systems of the organisations. The organisation can compare its own innovation capabilities with relation to other organisations. (Yliherva 2004)

For setting organisation's goals, this functional chart gives indicators for innovation capabilities

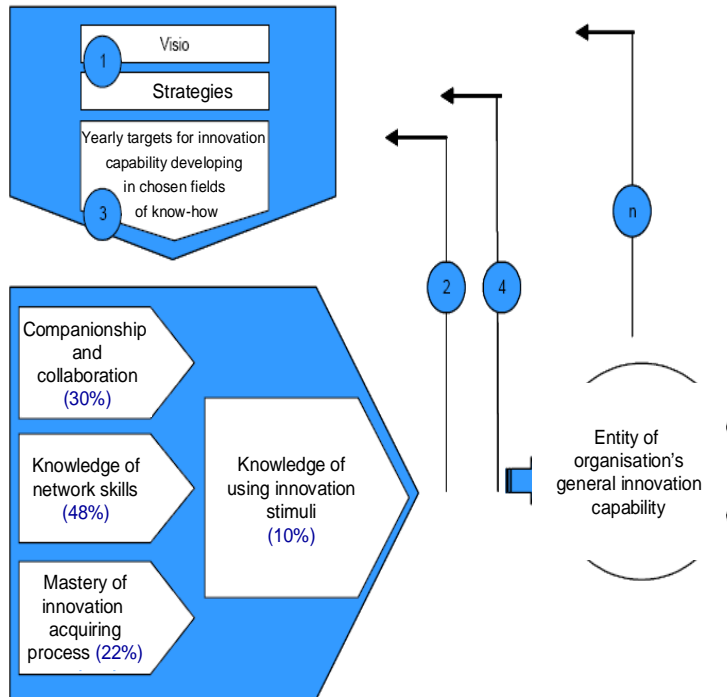


Figure 2. Management model of an organisation's innovation capabilities (Yliherva 2004)

According to Yliherva (2004), the developed model was tested and evaluated in the Finnish infra-industry operational environment in six different ways and the model passed the tests. He continues that it can be applied in all organisations such as public utilities and business corporations, and that the model is suitable

for different states of distribution channels. The model is being introduced extensively and is available for organisations on the internet.

Most of the theoretical contribution was probably achieved through the functionality of the management system. Theoretical contribution also arose, because developing the intangible capital in organisations has been considered problematic, especially due to the lack of indicators and measuring methods. The model consists mainly of those indicators and methods created for this purpose. Also significant, on behalf of the theoretical contribution, was that by obtaining services, these organisations could develop their own innovation capabilities at the same time by combining challenging innovation combinations. Extensive material related to the acquisition affairs helps in any case to understand the relations between methods and outcome. The result of Yliherva's study was able to reflect several links with the existing theory. One point of reflection was that with the help of the model, organisations could reduce the uncertainties detected in the organisational- and economic theories, which are connected to the selecting of partners and acquisition affairs. (Yliherva 2004.)

Integrative Action Model

The integrative action process is the application that is used for best practices of exploratory and creative learning. Its object is to implement and integrate the three statutory tasks of Finnish universities of applied sciences. The Integrative Action Process is illustrated in Figure 3. The main contribution of integrative action process model is the creation of linear development framework for cyclic innovation activities together with quality perspective. The model is more a liberation process for innovative activities than a process for automatic innovation generation machine. The innovative learning cycles do not follow any fixed order. Also, the innovation orientation has the freedom of methods and creativity. The nature of integrative process is rather supporting than managing. (Pirinen 2008.)

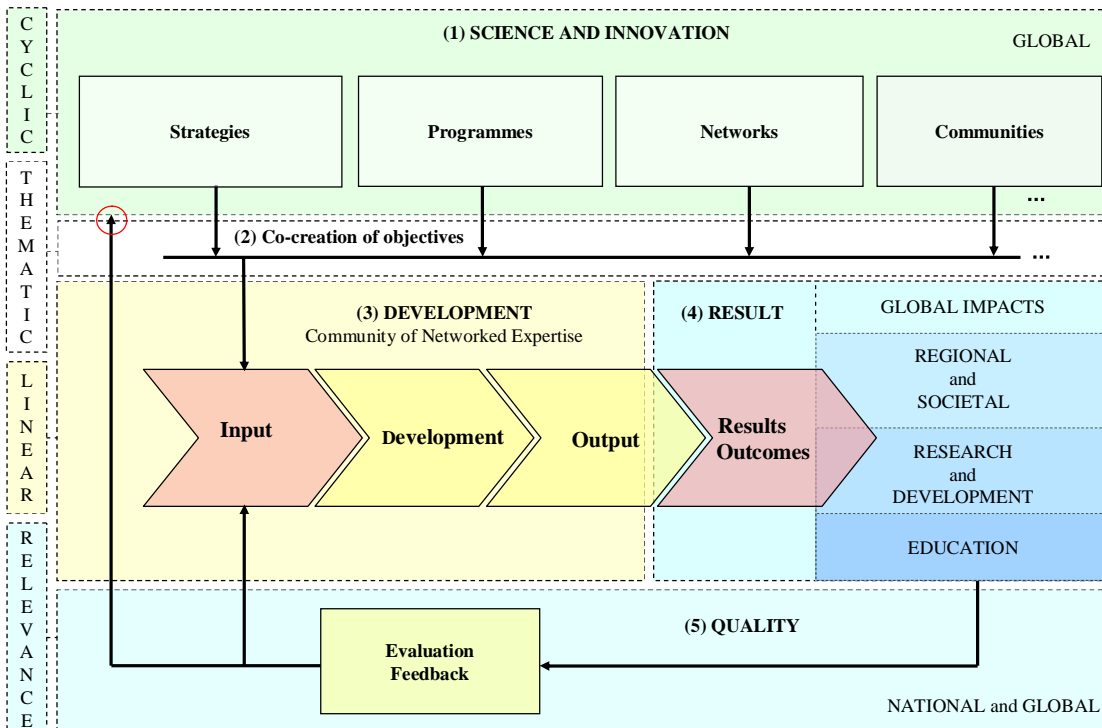


Figure 3. Integrative Action Model (Pirinen 2008)

The integrative action model includes five parts: (1) science and innovation (cyclic); (2) collector of co-creative objects emphasizing on full duplex transformation functions (thematic); (3) development (linear); (4) result; and (5) quality (relevance). The implementation process starting point may be any of the parts, from (1) to (5). The starting point varies and depends on the objectives and perspectives. (Pirinen 2008.)

SATERISK Project

Currently, satellite navigation and tracking have become everyday routine and they are still growing while EU's new satellite system Galileo will be operative in 2013. Positioning, navigation and tracking are used to decrease risks especially in logistics and to optimize work flow, but does it always work that way? Can international legislation about tracking, or lack of it, cause problems when doing tracking abroad? With technical aspects, are your tracking systems good enough to increase the security of your crown jewel or are you just giving extra hints to thieves? For answering these questions, the SATERISK research pro-

ject was started in 2008. It aims at a situation where laws on positioning and tracking and the financial risks posed by their usage will not prevent the use of machine to machine (m2m) tracking across state and union borders. Essential part of the project is to study signal interference in tracking and find ways to improve tracking devices and user habits in the future to avoid them.

SATERISK is a research project, which aims at a situation where laws on positioning and tracking will not prevent the use of so-called m2m tracking devices across state and union borders. The project aims to bring new, international level know-how to the European security field. The project will also create new methods and development paths for positioning and tracking systems. The widely used US-based GPS (Global Positioning System) satellite positioning system will soon get an EU counterpart and rival from the Galileo, see COM(2006)769. While most of the satellites are still on the ground, it is important that any problems and possibilities related to the new system can be charted. The project also aims to offer technological solutions to issues that rise while the project is ongoing.

SATERISK is a joint research project of universities, public organizations and private companies with regard to positioning, navigation and tracking systems. Table 1 shows the partners and budget of the SATERISK project. The aim of the project is to evaluate risks and the technical and legislative needs for positioning and tracking here and now, as well as in the future.

Table 1. – Budget of the SATERISK project

Partner	Funding / EUR	Funding / per cent
Tekes	337 800 €	60 %
Laurea University of Applied Sciences	59 600 €	11 %
University of Lapland	51 600 €	9 %
Finnish Customs	30 000 €	5 %
Finnish industrial partners (EADS, Loomis, Portalify, Trevoc)	84 000 €	15 %
Total	563 000 €	100 €

Birth Process of SATERISK Project

The SATERISK research project shaped up within a LbD process as follows: The object (*risks of satellite positioning/tracking*) was born within a student group. In the very beginning, it was a subject of a developing project of two Laurea's students participating specialisation studies for international security management. In the beginning, the competences of the students were that one knew the tracking technique well and the other had large use experience of these systems, but neither knew the risks with regard to tracking. The idea developed within dialogs with students and teachers. During dialogs among value networks (e.g. students, teachers, researchers, companies, government officials) idea evolved into a large research project funded by the Finnish Funding Agency for Technology and Innovations (TEKES). The project started 2008 and it will last three years.

Experimental Evaluation of the Models of Innovation Capabilities

According to Yliherva's management model of an organisation's innovation capabilities (2004) as shown in Figure 2, organisation's innovation capability (100 %) consists of following parts: (1) knowledge of network skills (48 %), (2) companionship and collaboration (30 %), (3) mastery of innovation acquiring processes (22 %), and (4) knowledge of using innovation stimuli (10 %) (Yliherva 2004). In Pirinen's integrative action model four elements are specified: (1) cyclic – to support creativity and innovations; (2) thematic – for the co-creation of pioneering innovations, scopes and structures of bodies of knowledge; (3) linear – for the implementation of research, development and action processes; and (4) relevance – for validity and scientific rigor as well as quality of execution and production (Pirinen 2008). In this section, these two models are evaluated according to Lee's (1989) theory-testing case study approach.

The case study SATERISK confirms both models through empirical testing, at least partly. Empirical validity of Yliherva's management model of an organisation's innovation capabilities is satisfied as follows: Knowledge of network skills was important, when developing SATERISK idea within value networks. Also, earlier companionship with the hard-core companies (such as EADS, Trevoc) was of great importance. By obtaining services (e.g. knowledge about law of outer space, temporary lecturers), Laurea is developing its own innovation capabilities at the same time by combining challenging innovation combinations.

When building the research consortium, partners were selected according to their developing capabilities.

When elaborating Pirinen's integrative action model, the idea, foundation, focus, themes, topics and spirit of the SATERISK project matured according to the cyclic and thematic parts of the model. The linear and relevance parts are now in action stage, and so it is too early to discuss how the SATERISK case confirms these parts of the model.

Lee (1989) presents that one requirement for the model of interest is that it is at least as predictive as any rival model. This requirement may, of course, be satisfied more rigorously by increasing the number of rival models against which its predictive performance is compared. In this case study, only two models were studied, so it did not rule out rival theories and future studies are needed.

According to Lee (1989) the requirement that the model of interest be logically consistent may be more rigorously satisfied by increasing the number of predictions derived from it. Lee (1989) also presents that the requirement that the model of interest be falsifiable may be more rigorously satisfied by increasing the number of predictions derived from it and through which the model could be proven wrong. In this case study, no predictions were derived from the model. This should be a matter for future studies.

Discussion

This article studies, how the SATERISK research project shapes up within a LbD process, and how its shaping process fulfils two selected models of innovation capabilities; (1) Yliherva's management model of an organisation's innovation capabilities, and (2) Pirinen's integrative action model.

According to Yliherva (2004), his governance of organisational innovation capabilities model is made for infra organisations, but could be applied for all organisations. The empirical case study SATERISK confirms the aspects which are shown in the model, but the model does not cover the cyclic creation process of the innovation idea.

Pirinen's integrative action model is made for universities of applied sciences. It covers the creation process of the innovation idea and tries to integrate the cyclic and linear parts of real innovation processes. With regard to SATERISK case, the integrative action model was implemented for enabling knowledge creation and globalization of transformations. The idea, foundation, focus, themes, topics and spirit of SATERISK were elaborated by students, so SATER-

ISK is purely a student innovation and creation. This means that student driven creations leads also to the first imperative and the innovation centre based objectives may also be co-creative students' creations. In conclusion, it seems that different kind of methods helps and contributes the parts of linear orientation, but there is no formal solution for cyclic innovation processes. Therefore, freedom of methods, elasticity of objectives and trust exists in cyclic innovation orientation is needed.

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13 Model Workspaces in the Development of Online Learning Environments

Irma Mänty, Elina Rajalahti, Lauri Jäntti

Innovative work in line with the LbD model requires continuous development of the learning environment and the tools used, as well as the creation of new communal work methods. The pedagogical models of online teaching have been developed and researched in recent years at various institutions, such as the University of Lapland. Model workspaces in line with the Learning by Developing (LbD) model were built for Laurea's online learning environment in the PraXis project in 2006. Two surveys were conducted in 2007 in order to investigate the use and development needs of the workspaces. The Development Environment workspace was refined further, and implemented in the context of the national eNNi health initiative in 2008-2012. The Finnish Higher Education Evaluation Council chose Laurea's model workspace as a good example of virtual education.

Introduction

This article describes efforts targeted towards organisational development by means of developing online studies and virtual work at Laurea University of Applied Sciences. Utilising information and communication technology as well as online learning provides an excellent opportunity for Laurea's unique Learning by Developing (LbD) learning and operation model, which combines pedagogy, regional development cooperation and the labour market. The perspective is one of implementing models that promote learning and flexible working in order to advance a shared operating culture.

At Laurea, the implementation of the Learning by Developing model has led to critical examination and development of teaching and learning methods. Innovative work requires continuous development of the learning environment and the

tools used, as well as the creation of new tools. It appears probable that the use of virtual learning environments according to LbD principles is easier with models than without them. The pedagogical models of online teaching have been developed and researched in recent years at various institutions; one of these is the University of Lapland, which has focused for example on mind tools for online teaching and learning, creating a playful learning environment for children and a model for digital video teaching. The Master's thesis by Vaara (2005) examined the experiences of teachers and students in relation to pedagogical models at the Kemi-Tornio and Rovaniemi universities of applied sciences.

This article describes the PraXis project, in which model workspaces in line with the Learning by Developing (LbD) model were built in 2006. Two surveys were conducted in order to gain data for the article. The first survey was carried out in January 2007 on Laurea's model workspaces. Twenty-seven teachers and experts in online learning representing four universities of applied sciences participated in the training. The second survey was conducted in November-December 2007 for Laurea personnel on the use and further development needs of the LbD workspaces. The survey received 65 responses. This article utilises the results of both of the surveys.

The article starts by outlining the idea and construction method of the LbD model workspaces and giving a brief description of the structures of implemented model workspaces. The article then goes on to explain the use of the models at Laurea on the basis of the two surveys that had been conducted. Chapter 4 illustrates the application of the Development Environment model in the national eNNI health initiative. The article concludes with a depiction of needs for further development and a general reflection on supporting the LbD model by means of online learning.

LbD model workspaces

Model workspaces supporting the LbD model

Learning by Developing (LbD) is a learning and operating model, which redefines the learning process as a research and development process. The starting point lies in an authentic workplace-oriented development project and in partnerships between students, lecturers and partners from the world of work. Learning takes place in authentic workplace development situations, and appears in individuals and communities as new competence is constructed (for example Raji 2007).

The Learning by Developing operating model has been developed at Laurea from the early 2000s

through practical implementation of a pedagogic strategy and by researching and developing the university's operations. Laurea's staff has participated actively in the development work. Staff has received training for the adoption of the LbD model in accordance with an annual training plan as well as in the PD programme on Transformative Teaching. The PraXis project was launched in the spring of 2006 with a task to promote the shared operating culture by supporting learning in line with the LbD model in a virtual environment. The goal was to develop templates that could be implemented conveniently. Previous shared templates produced at Laurea were mostly intended for study units in accordance with the curriculum and based on the individual ideas on learning held by their authors, rather than on a specific learning concept. In the PraXis project, a decision was made to construct model workspaces for the online learning environment, which were founded on the LbD model and which could be implemented as a platform within an online work environment for different projects. Figure 1 presents the role of model workspaces as a bridge between project work and the Learning by Developing operating model.

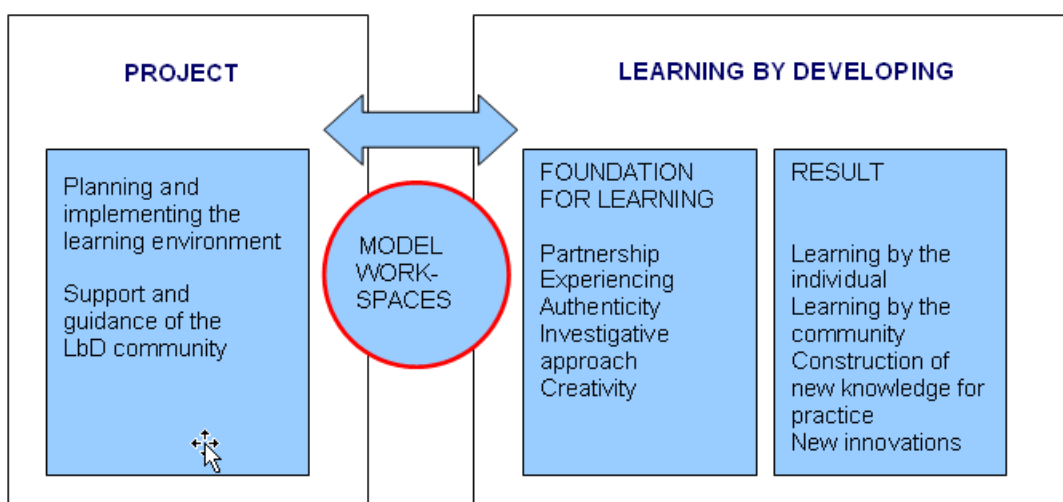


Figure 1. Models supporting projects. (Modified from Hakkarainen, Saarelainen & Ruokamo 2007 TML model for teaching and meaningful learning)

According to Vahtivuori and Hänninen's (2004 , p. 51) research of the pedagogical decision-making and theoretical thinking of teachers, they were found to tend to use intuitive and experience-based, practical everyday knowledge in decision-making. Less emphasis was placed, for example, on theory learnt during their own studies, or on rational thought. The close cooperation in LbD projects between lecturers and workplace representatives has required flexible methods to suit each situation. A hectic work pace and a continuous need to develop products increase the challenges of the cooperation.

Virtual methods fall into place as a logical tool for this kind of cooperation. The diversity and functionality of tools and methods are requirements for the generation of proper workplace competence, and this requires continuous learning and competence development. Several studies (e.g. Saranto 1997, Arbaugh 2000, Parnell & Carrarer 2003, Hanley 2006) have shown that basic attitudes, technophobia and problems encountered by users are obstacles to the adoption of virtual learning environments. Thus teachers are required to engage in continuous, self-directed development of network-based work methods and organisational and personal competence, so that they can adopt and utilise new information and communication technology applications.

With the above in mind, it could be said that easy-to-use models and LbD materials would benefit teachers in their pedagogical decision-making, as they plan and conduct their teaching work. Frequently used project types were sought as templates for the model workspaces, which can be adapted and applied for the needs of individual projects. In line with the LbD model, the shared starting point for the templates includes learning and doing together, partnership between students, teachers and other experts, and operating in an international environment.

Constructing model workspaces

The PraXis project was conducted in the form of a workshop in spring 2006. On the basis of proposals from lecturers, four project types were chosen (practical work, development environment, thesis workshop and study unit template), which were modelled and constructed in the Optima online learning environment. The 13 lecturers who had proposed the individual projects were selected to process the models. At the same time, an LbD project tool was developed by five lecturers in the Transformative Teaching training, and this was adopted as the fifth model workspace for Optima.



Image 1. PraXis project workshop in spring 2006

The PraXis project progressed during the three workshop days in the spring (Figure 2). In between the contact days, the models were processed online by teachers and in small groups. Discendum Oy functioned as partner and trainer. The model workspaces were piloted in August 2006 and opened for the entire staff in November. The study unit template was not finalised in the project. The model was abandoned, partly due to the fact that with the new curriculum, Laurea shifted from study unit-based workspaces to workspaces oriented around projects, themes and other larger entities.

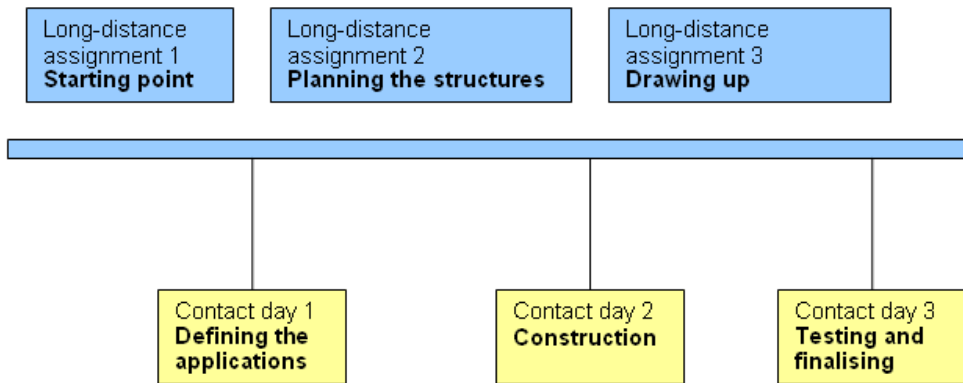


Figure 2. Segments of the PraXis project

The ideal template in the PraXis project was described as follows:

- easily understood operation area and added value
- all-purpose, adaptable within its operation area for a variety of purposes
- easy to implement
- includes the necessary guidelines for implementation and use for different user groups.

Work to create functional templates was distributed so that any interested lecturer could participate in the project. The ideas for pedagogical implementation came from the lecturers, whereas harnessing the online environment, i.e. the technical structures supporting the ideas, was conducted by experts in online learning. Final implementation - assembling the structural elements into finished templates and the necessary guidelines - was carried out by the teachers supported by experts in online learning. In addition, a graphic designer could be used for the project to achieve the desired visual appearance.

As mentioned above, project proposals for developing the templates were requested in advance, and

those to be implemented were selected from the proposals. Before the first meeting, remote assignment 1 focused on drawing up the research questions. The participants were to provide preliminary ideas for research questions to advance their own projects. At the same time, questions were asked on the IT skills of the participants in order to provide suitable guidance. The first contact day was

spent in project-related group work, where each project was defined more specifically (e.g. objectives), the related LbD process was outlined and the required structural elements for the template were described. A separate form was used for defining the structural elements, asking about the task, added value, user groups and critical factors of the element. Information gained in this way was then used by experts in online learning for implementing the defined operations according to the possibilities made available by the online environment.

The subsequent long-distance assignment focused on roughly outlining the template and where the defined structural elements would be placed. The aim was to create a good foundation for building the templates in group work on the second contact day. The design for the structural elements that had already been defined was concluded by the second contact day, when actual construction work for the templates began. The work method was similar to clinics, where experts in online learning steered the building that took place in groups. The last long-distance period was reserved for drawing up the guidelines, so that the functionality of the templates could be tested during the next contact day.

The defined structural elements had names such as: "monitoring practical work, message centre, audiovisual centre, publication platform, evaluation centre, knowledge-building centre, evaluation tool, recycling, barometer, problem-solving workshop". Everything was implemented in a way that at least made clear how the defined needs could be met with tools offered by the online environment. Refining the structural elements did not advance very far within the framework of the project, but templates were achieved. The guidelines remained somewhat inadequate due to lack of available time.

Presentation of the model workspaces

All of the constructed LbD model workspaces share the following elements:

- General guidelines for the workspace (short instructions on using the model workspace and instructions for the tutor and basic user for using Optima)
- page templates and modification instructions
- checklist that allows the author of the workspace to test that basic functions work correctly.

The workspaces can be converted and modified by adding and removing folders and objects according to what is necessary for each project. The visual appearance can be modified through illustrated page templates and elements.

The Professional Development in Practice model workspace contains eight root folders: general guidelines for the workspace, message centre, instructions for practical work, assignments, learning environments, tutoring, evaluation and portfolio for practical work. The folders can be used for saving ready material (e.g. instructions and forms), returning and evaluating assignments, reserving appointments for tutoring, conducting tutoring discussions and keeping a learning diary. Practical work consists of learning and a thesis carried out in accordance with each student's personal study plan in Laurea's learning environments, workshops and various operating environments in the field. Practical work is also carried out in international student exchanges. The Optima workspace is designed as a virtual workshop for students, workplace mentors and tutors.

The Development Environment model workspace consists of six segments: operating instructions for the workspace, project documents, message centre, knowledge-building centre, information-sharing centre and evaluation centre. The knowledge-building centre forms the core of the workspace and is an area for conducting team work. It can be copied for each team participating in the project. It is where information is created and processed in accordance with the LbD ideology, by finding and building knowledge as a team. Teams are able to share and produce information in the knowledge-building centre. Tips for acquiring information can be found in the information search folder. The knowledge-building centre contains a workspace for each team in the team folder. The information-sharing folder shows the processes of products and publications created in the project. It is divided into publications and service products. The evaluation centre contains three evaluation methods; self-evaluation, peer evaluation and project evaluation. The used method can be chosen according to the goals and needs of the project.

The Thesis Workshop model workspace comprises eight root folders, functioning as a framework for advancing the thesis process: familiarisation with the development project and thesis process, coming up with a subject, thesis planning stage, carrying out the work for the thesis, reporting and publishing the thesis, maturity test and competence evaluation. Students save working documents related to the thesis in the workspace. Workspace members follow the calendar and notice board for information related to the thesis. The guidance folder contains instructions, links and an opportunity for discussion with tutors and other thesis workers.

The LbD project tool is intended for designing, implementing and evaluating projects. The root folders are: information on LbD, project design, project evaluation

tion and development, and project documents. The project design, implementation and evaluation folder contains material for the different stages of the project process and an opportunity to use the discussion forum. The questions contained in the folders reinforce a deeper understanding. Finally, the project plan and all of the reports related to the project are saved in the project documents folder. Questions, materials and tools allow those implementing projects to process the development project both individually and together.

The LbD model workspaces have been available using staff passwords in the Optima online learning environment. From the end of 2006, teachers and other staff have been able to copy the model workspaces or parts of them for their use.

Use of the models at Laurea

A self-developing organisation systematically evaluates its own operations. The use of model workspaces and experiences were evaluated in two surveys; the first one surveyed the teachers and online teaching experts in four universities of applied sciences in January 2007, while the second was directed at all Laurea staff in November/December 2007.

The first survey focused on the use of model workspaces in general. A total of 27 persons from four different universities of applied sciences participated in the survey (Laurea, HAMK, Kemi-Tornio and Turku universities of applied sciences). 26% of the respondents had used a model workspace created by someone else in teaching, and these had been created within their own organisation. Respondents saw that the main challenges for using the models included; having the right mind-set for the author's thought processes, understanding the logic behind the model on the basis of what was written, and making changes to the model to remove all elements that would not be used. Respondents thought the best qualities of the ready models were time-savings, idea-sharing and reduced workloads. 74% of respondents for the first survey were willing to use ready-made online teaching models in the future.

A second survey was conducted at Laurea at the end of 2007 on the use of LbD workspaces and related development needs. Respondents included a total of 65 Laurea senior lecturers, principal lecturers, educational support staff and diverse project staff. 88% of the respondents were senior lecturers. Viewed by field of study, the majority of respondents represented social services and health care, Laurea's second largest field of study. Projects that function as learning environments in line with the Learning by Developing model have at large been im-

plemented in the Optima online learning environment when online workspaces have been required. Most of the respondents (78%) had participated in the planning group or had themselves designed an LbD project for Optima. Some of the respondents (28%) were also familiar with LbD project environments created on other Internet-based platforms.

Based on the later survey, Laurea's staff was not yet familiar with LbD model workspaces created in the Optima online learning environment. Only 35.4% of respondents said they had used them in some way. 30% of model workspace users had used them as they were, while a slightly larger group, 39% of users, had integrated parts of them into their own workspaces. A fifth (21%) of respondents felt they had found ideas for their own workspaces from the model workspaces, and every one in ten respondent had used a workspace in some other way, as background material for a study unit, for example. Figure 3 presents the methods of use of LbD model workspaces. 12% did not find the time to get acquainted with model workspaces, or workspaces were not suitable for the projects (23%). Just over one in ten respondents (12%) were unaware of the model workspaces, although they could have made use of them.

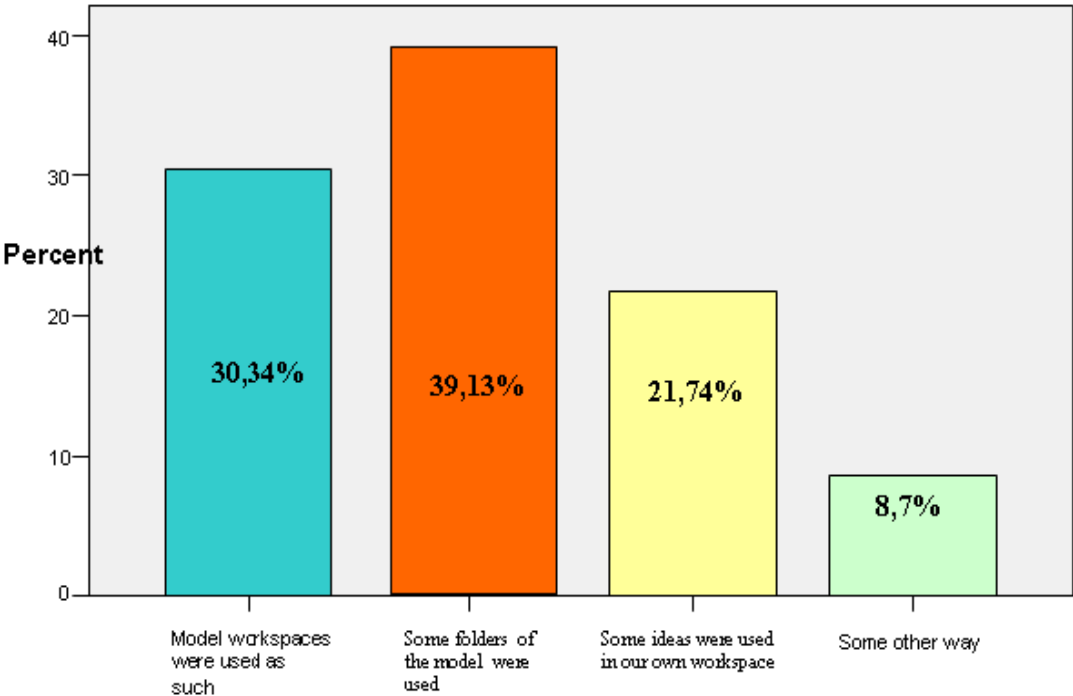


Figure 3. Use of LbD model workspaces

Despite their infrequent use, LbD models were seen to have a prominent status and good qualities. Respondents saw the ready models to be of use when planning modules, as this would not have to start from scratch, and limited resources could be focused on what was most important - creating content. The original goal for constructing model workspaces in the PraXis project was to provide assistance in operating in an online environment, a low threshold for online implementation and an opportunity to construct an esthetically and functionally clear online operating environment. There was a willingness to make prepared material and information entities readily available as shared resources for all of the users in the learning environment. These issues were also raised in the responses to the survey and were considered to be of importance and significant steps forward. A clear visual overall image was seen as a motivating factor for both workplace representatives and lecturers with less experience in online teaching to participate in online implementations.

Respondents to the survey conducted at the end of 2007 saw the challenges for the use of LbD model workspaces to be related to aspects of their all-purpose use, being tailored to one's needs and versatile use of the online environment. Some of the respondents saw their personal competence in the online environment to be so weak that operating in the environment and familiarising with the models was difficult. However, most of the respondents felt they knew Optima as a tool well or very well, only 12% of respondents claiming to know Optima fairly poorly or poorly. Some of the respondents were uninformed on the existence of the model workspaces.

Operations in line with the LbD model have shaped work methods and tools in the online environment, which was not necessarily known to all of the respondents. Some saw a danger in that the conceptual language and thought patterns of the designers of the model workspaces would not open up, robbing understanding of the content. This is why some of the teachers wish to continue to create their own environment from the beginning. In addition, some of the model workspaces were considered to be too tied to a particular field. Some of the respondents would have liked more guidance on the purpose and how to use and benefit from the models. Constructing individual content on top of a ready-made LbD model was seen as a challenge. Team work for assembling the final online environment was suggested as a solution. An individual workspace tailored by team work increases the shared use of the environment and an understanding of common operating methods. However, respondents also feared that should teachers not receive enough support and training, the online learning environ-

ment would not be used as an interactive platform, but may merely function as a storage place for material.

In comparing the responses of the surveys carried out in January 2007 and the end of 2007, it can be said that although the use of ready models was fairly low in both respondent groups, there is a willingness to use the models in the future. 74% of respondents of the survey conducted in January and 89% of respondents of the survey at the end of the year were willing to use the models. 35 of Laurea staff claimed to be interested in developing the LbD workspaces themselves in the future. The responses to both surveys raised time-savings and reduced workloads as particular benefits of the use of models. On the basis of the results of the surveys, some of the general difficulties mentioned in relation to the models were understanding the logic behind individual models and tailoring them to specific projects.

Application of the development environment model workspace

In designing the Development Environment model workspace constructed in the Optima learning environment, the goal was to have it used as a virtual workshop for Laurea's projects. Intended users included lecturers, students and workplace developers from different fields of study. The template was built in line with thinking behind the LbD model, steering towards and supporting development-based work. The Development Environment model has been in use since 2006 for several projects.

Optima was chosen as a platform for communal work in the national eNNI health initiative (2008 – 2012), and workspaces were constructed in accordance with the development environment model. eNNI (eNNI ~ Electronic Documentation of Nursing Care – the R&D Project for Creation of Nursing Informatics Competence in cooperation between education and working life) is an initiative with the objective of forming new types of development cooperation in the field of social services and health care between universities of applied sciences and working life. Shared development operations seek to create new types of competence and knowledge and advance workplace practices. Partners include the Ministry of Education, Finnish Online University and 14 universities of applied sciences.

Project work within the eNNI initiative takes place in Optima (Figure 2), where the steering group and project team share a development environment -based office space, while partners from different parts of Finland work in a shared LbD development environment application. External communications are conducted

through a web portal and public blog. Online work takes place using the Skype web phone and the WebEx online conference system. The development environment model workspace will also be constructed on the Moodle learning environment platform, where project partners using the same system can copy it for their own use. The visual appearance for the eNNI initiative remains as uniform as possible in all of the network tools.

Implementing and copying the model workspace in the eNNI initiative has proceeded as hoped. The development environment model and complementing tools have provided the project with a shared workspace for regional work groups in different parts of the country. More flexible, communal tools are still required for Optima, as experiences so far have shown partners to have been fairly cautious in beginning operations on the online platform. Online meetings on WebEx, on the other hand, have quickly received positive feedback from participants.

New social media tools will be tested during the project to further communal work. Wiki will be tried as a tool for process writing and the Second Life virtual world for organising a networking event.

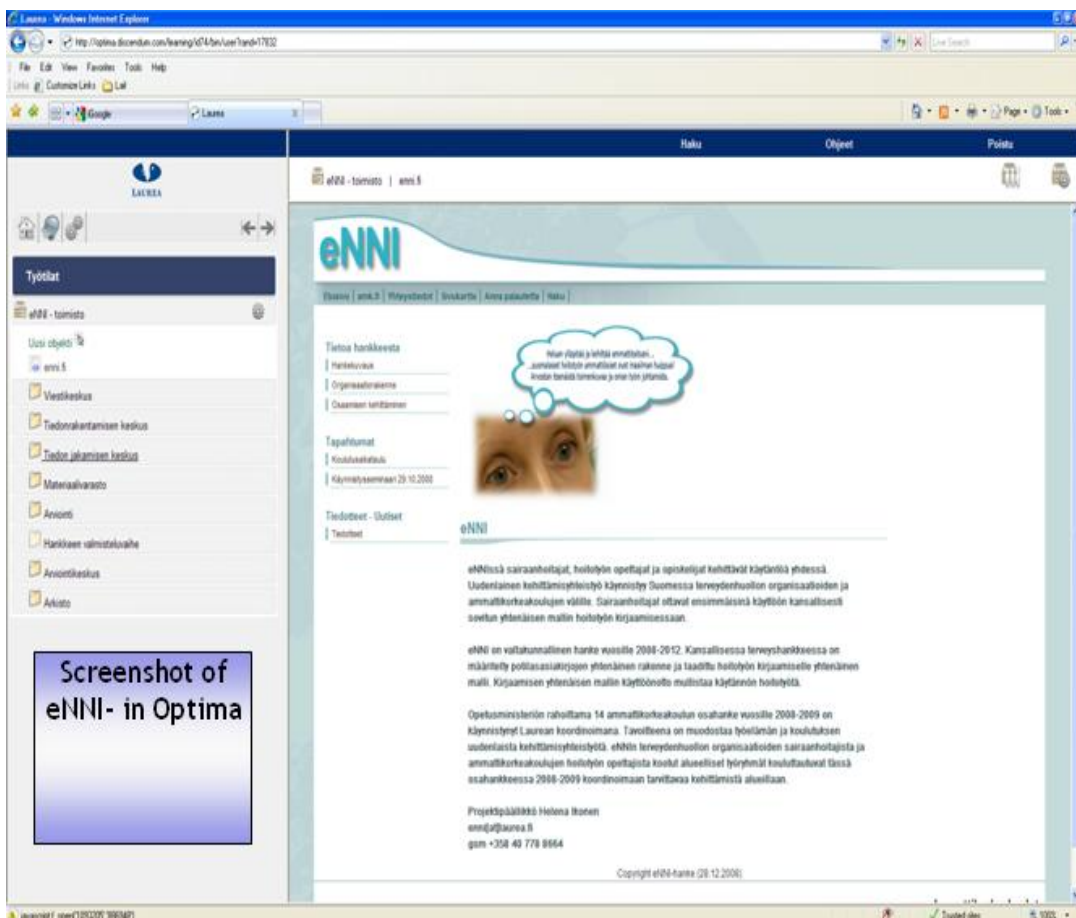


Image 2. Workspace of the eNNI initiative in Optima

Considerations

Online learning is a vital pedagogical tool in universities of applied sciences. Time pressures in

the development of both pedagogy and teaching technology require a constant overhaul of the models for online learning and teaching. Teaching is shifting more towards guidance, requiring flexible solutions that change according to the situation. In line with Laurea's Pedagogical Strategy (2007), the Learning by De-

veloping model is based on a development project that is genuinely rooted in the world of work, which aims to produce new practices.

Advancement of the project requires collaboration among teachers, students and workplace experts, which at best produces new knowledge for practice. The foundation for guidance is constructed on cooperation between student, teacher and workplace representatives. The starting point is that a student or student group is the owner of their individual learning processes in development projects. This shifts the focus from the lecturer to the student's own responsibility, though with the lecturer genuinely present. In accordance with the strategy, Learning by Developing emphasises and increases the significance of guidance provided to students by their peers and by workplace experts. The structural elements of the model workspaces need to be developed in an online learning environment to support different forms of guidance. Guidance and online pedagogical competence require development, for which operating in a virtual environment offers excellent opportunities by taking advantage of different networks.

Competence for expertise and guidance in an online environment cannot be achieved and developed solely through formal education, but by working in communities and interacting with people. Limited user rights for online learning environments may pose a hindrance for the development of communality. Workspaces should be kept as simple as possible, and include clear instructions for use. Receiving usernames and transferring material into an online learning environment should be as easy as possible, so that workplace representatives are motivated to use it. The language used in model workspaces should be general enough to suit all fields of study. A learning environment that is too closed can lead to project-specific work, where information is not shared to benefit larger communities. In working in line with the LbD model, it is important to remain open and consider possibilities offered by new communal tools. According to Leppisaari, Silander and Vainio (2006), implementing authentic online teaching is a pedagogical challenge for universities of applied sciences. In their view, authentic learning in a virtual environment requires dealing with authentic, real life problems and social interaction and communality to support authentic learning. Social media tools that are integrated into model workspaces allow to create new work methods that adapt to the spirit of the times. The aim in constructing LbD environments is to support new properties that promote the authenticity and experiencing of the learning process; as well as partnership, an investigative approach and creativity. Activities in line with the Learning by Developing model, where projects deal with genuine development tasks in working life with work-

place experts as partners, are established on authenticity. This makes it possible to create innovations that cross the borders of individual projects.

The structural elements of the model workspaces need to be developed in an online learning environment to support different forms of guidance. Guidance and online pedagogical competence require development, for which operating in an online environment offers excellent opportunities by making use of different networks. Helakorpi (2006) refers to Hakkarainen (2003) and mentions hybrid expertise, where the borders of competence are crossed and new sociocultural relationships are formed in different networks. Participation of this kind is a clear advantage in workplace cooperation and guidance processes of online learning. Networks outside of the organisation offer plenty of information to online teachers, who work as gatekeepers between the different networks that they know. Through a variety of social networks, teachers have an understanding of the shared fields of activity of different players and the significance of these in online guidance. Core competence areas are increased through the networks, including networks external to work: competence in relations, competence in the subject, pedagogical competence, development competence and organisational competence (Lehtinen 1997, Palonen 1997, Helakorpi 2006).

The Finnish Higher Education Evaluation Council mentioned Laurea's LbD model work spaces as a good example of online education (Leppisaari et al. 2008). The Praxis initiative itself was a good example of work carried out in line with the LbD model. Corporate partnership with the founder of the Optima platform, Discendum Oy, proceeded by experts from the company leading the design work of the templates and proposing implementation methods for structural elements defined by participants. In this way, the project supported the customer-friendly operating method of product development at Discendum Oy: implementation of structural elements defined by participants was a good test for the ability of the platform to support different pedagogical ideas. Various development targets and ideas for product development arose, some of which have already been carried out. There was an increased understanding of challenges in the field of teaching and of the competence that teachers have in conducting online teaching. Furthermore, the presence of a business partners may have offered teachers participating in the project further insight into the typical thought patterns and operating methods of a company.

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14 Ethical reflections on “Living Labs” as learning environment

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The aim of this article is to reflect on fostering ethical awareness and transparency when using Living Labs as learning environment. A pilot study of web sites and blogs focusing research and development presentations and reports on Living Labs show little ethical concern. It is important to make the ethical issues visible, fostering researchers and students to think and act in an ethical way.

The concept of Living Labs

Living Lab is a rather new concept used in European research and development since the late 1990'ies, including about 70 projects⁶¹, most of them technological. Living Labs can be used as open innovative research platforms – something between in-house research and development, and pilot studies. The Swedish IT researcher Ståhlbröst makes in her doctoral thesis (2008, 35f.) a distinction between Living Labs as an innovation environment and as a methodological approach. As environment Living Labs refer to specific situations where technology users are willing to be involved in organised system development processes in their daily life, in factories, at work, in some cases even in their own homes⁶². Living Labs should, according to Ståhlbröst, have access to multi-contextual environments, high-end technology and a supporting infrastructure.

⁶¹. Oulasvirta, A. 14.2.2008. Living Labs, osa II. Tutkijan näkökulma (Living Labs, part II: The researcher's perspective). IN HIIT. Tietotekniikan tutkimuslaitos HIIT:n tutkijoiden suora kanava yliopiston kolmanteen tehtävään. <https://inhiit.blogspot.com/2008/02/>

⁶² Central European Institute of Technology gives examples of Living Labs focusing technological innovations in the homes of elderly human beings. www.ceit.at

Methodologically Living Lab has been used as an approach for innovative research and development. The trustful collaboration with users request continuity, an open process, realism, spontaneity, and empowerment of users (Ståhlbröst 2008, 36). This new concept can also be criticised as performing quasi experiments as they are user experience platforms⁶³.

Both in Living Labs as innovations environments and in Living Labs as research and development studies students from universities and universities of applied sciences take part. Living Labs is also formed as a concept for learning and innovation, involving universities and customers in different kinds of projects in order to understand and interpret specific patterns of human behaviour.

In European research and development there is a strong tradition of research ethics raising from medical research after the second world war. The influence of the principles of research ethics is widely spread, but not often discussed related to technological development and innovation. In Europe there is a new wave of ethical concern and several nations have written their advises for good scientific practice, in Finland 2002.⁶⁴ Following the ethical guidelines of Finnish National Advisory Board on Research Ethics⁶⁵, good scientific practice includes challenges to follow modes of action endorsed by the research community, applying ethically sustainable methods, taking due account of other researchers' work and achievements, questioning the right to research results etc. For the educational use of the Living Lab concept it is specially important to foster ethical awareness making the ethical implications understandable for students as well as for other participators.

Ethical issues concerning both professional ethics and research ethics arise now in the professional education challenging everybody to reflect on ethical issues. At Arcada university of applied sciences ethical advises for good scientific practice in studies, education and research have been established and confirmed since 2008. The university is taking part of Living Labs projects in Helsinki region and Living Labs are used as learning environments for students. This is one reason why it is important to rise ethical questions on Living Labs.

⁶³ Mäntylä, M. 9.2.2008. Kiving Labs: kriittistä arviointia. (LL: critical evaluation). II HIIT Tietotekniikan tutkimuslaitos HIIT:n tutkijoiden suora kanava yliopiston kolmanteen tehtävään. <https://inhiit.blogspot.com/2008/02/>

⁶⁴ National Advisory Board on Research Ethics. 2002. Good scientific practice and procedures for handling misconduct and fraud in science.

⁶⁵ Finnish National Advisory Board 2002. Good scientific practice and procedures for handling misconduct and fraud in science, p. 19. www.tenk.fi/ENG/Function/htkeng.pdf

Ethical issues in Living Labs

A pilot review concerning Living Lab presentations on the web was performed in order to find out how ethical reflections or ethical concern is expressed in materials found on open web-sites, blogs and related articles describing Living Lab projects. That was a simple start of searching for material, not a real research project. The challenging question was to see how presentations, discussions, and reports discuss ethical issues. What is ethically sound practice in this kind of innovative research and development? A review of 75 open web-sites on Living Lab –projects was performed among thousands of examples found by a Google-search and by an ESBCO search. There was an apparent lack of ethical reflections in that sample - only few show ethical concern, pointing out the importance of discussing ethical principles for Living Lab projects. Only few presentations discuss ethical issues^{66, 67}. Are ethical principles tacit or just forgotten in presentations and discussions?

Research proceedings, articles, and reviews found study show ethical concern related to Living Lab projects - to some extent. Panek & Zagler (2008)⁶⁸ point out the importance of ethical reasoning using informed consent procedures and information kits, referring to Rauhala & Topo 2003 who compare the ethical difficulties of Living Lab projects to those of medical research. Topo (2006)⁶⁹ mention concepts, language, and human dignity as ethical tools, and principles of justice, autonomy, privacy and efficacy. Karagiannidis et al. (2008) rely on the ethical code of the professional members of the innovation team, that brings forth responsibility for the other in the Living Lab situation, like a “moral voice”.⁷⁰ On the other side Følstad (2008) who reviewed 32 academic papers on Living Labs, including research methods like questionnaires, focus groups, and obser-

⁶⁶ CEIT, Central European Institute of Technology (www.ceit.at)

⁶⁷ EPAScience Policy Council, Kentucky.

⁶⁸ Panek, P, Zagler, W. L. 2008. The Living Lab in Schwechat for Involving Older Persons in the Innovation Process of Assisted Living Technologies. REAL CORP 008 Proceedings (Mobility Nodes as Innovation Hubs 13th International Conference on Urban Planning in Information and. Knowledge Society May 19th -21st 2008)

⁶⁹ Topo, Päivi. 2006. Teknologian käytön eettisiä kysymyksiä iäkkäiden palveluksessa. Stakes. (Ethical questions using technologing in elderly services) www.lamk.fi/material/topo.pdf.

⁷⁰ Karagiannidis, C, Efraimidou, S. Koumpis, A., Molinari, F. 2008. Employing the Living Labs methodology to support experiential improvement of processes and practices in special education. Proceedings of the 6th International Conference on Networked Learning

vations, does not report any ethical reflections on Living Labs⁷¹. Neither Ståhlbröst in her doctoral thesis (2008)⁷² focuses ethical questions as an area of concern in Living Lab projects. In Austria CEIT focuses ethical advises for users in elderly homes as Living Labs, continuity in ethical concern, understandable information, and ethical reflections on the balance between technological security and sphere of privacy in the homes.

Conclusions

Living Lab as a mode of co-creative learning environment challenges the universities to make Living Lab learning an ethical training period for the student – as a part of learning professional, research and global ethics. As it has been regarded as a key to innovations, to knowledge development, to user-driven human-centred and open research approach involving researchers, experts, students, firms and public institutions together with people “in real life”, producing knowledge on new products, new services, new business models ⁷³, ⁷⁴, and new understanding and interpretation of specific patterns of human behaviour, all involved meet the ethical challenges. The professional code of team members should be developed; the responsibility for the project processes and co-creators should be focused.

Ethical reflections on Living Labs seem to be a somehow side-stepped theme in project presentations. In Living Labs as learning environments the ethical thinking should be visible, thus enabling learning to reflect ethically on the Living Lab processes, environments and user involvement, on used concepts with respect for human dignity, ethical conduct, responsibilities, security, informed consent practices, sheltering the individual's identity, autonomy and personal sphere when private homes are used as Living Labs environment, also taking due account of student's and users' work and achievement questioning the right to results (user involvement as innovators as a possible question of creditability and copyright policy). Creating ethical learning environments of Living Labs is a challenging task, fostering new experts and researchers.

⁷¹ Følstad, A.2008. Living Labs for Innovation and Development of Information and Communication Technology: A Literary Review. The Electronic Journal for Virtual Organizations and Networks Volume 10, “Special Issue on Living Labs”, August 2008,99-131.

⁷² Ståhlbröst, Anna. 2008. Forming Future IT – The Living Lab Way of User Involvement. Doctoral thesis. Luleå University of Technology.

⁷³ www.openlivinglabs.eu (10.2.2009)

⁷⁴ www.helsinkilivinglab.fi

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***III* WORKSHOP**

Leadership

15 Developing Academic Leadership

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Abstract

The focus of this paper is on how we support the developing leaders through secondments or Teaching Fellow in Principle Lecturer level roles within a UK post 1992 higher education institution. The challenging conversations take the academic beyond their own subject area and into intimidating territory of other disciplines where pedagogic language and terminology may be different. The roles would, in the past, have been in the domain of the specialists within a centrally based Educational Development Unit. A series of development opportunities were created within the initiatives and by one of the Faculties to support the academics. This paper will summarise the preliminary findings in a longer term research project focusing on the development needs of emerging academic leaders. The experience of these teaching fellows will also be evaluated with a view to informing the development of a university wide approach to the development and support of new academic leaders.

Context

A literature search under the term “academic leadership” produces numerous articles on executive level leadership: Vice Chancellors, Pro Vice Chancellors and Deans (see Spendlove, 2007; Randall and Coakley, 2007; Rowley, 1997). However, in reality academic leadership has the seeds of development at a much earlier stage in the career of aspiring academics. In the UK, the sector standards for teaching and learning support include a descriptor for staff “who have an established track record in promoting and mentoring colleagues in learning and teaching to enhance the student learning experience” (HEA, 2006). The move

from a role where the focus is on their own ability to enhance the student learning experience to mentoring colleagues frequently comes without power, in terms of budget or managerial status. The notion of being an agent of change, outside their subject discipline, is additionally challenging. The medium for educational change in an organisation as complex as a Higher Education Institution (Stacey, 2007) is through dialogue (Shaw, 2002) through which change emerges (Seel, 2005). The locus of change also varies between institutions (Wisdom, 2008) and the responsibility for developing staff no longer remains the domain of Human Resources or Educational Development Units but increasing devolved to a local level within a Faculty⁷⁵ or Department.

Aims and background of the study

The focus of this paper is on how one UK post 1992 higher education institution supported developing leaders through secondments or Teaching Fellowship roles. The challenging conversations take the academic beyond their own subject area and into intimidating territory of other disciplines where pedagogic language and terminology may be different. Change in large, modern post-1992 institutions involves understanding a highly complex system and the responsibility for changing academic practice lies with different groups of stakeholders. The approach adopted has been to recognise the complex nature of academic practice and to understand how change happens in organisations, particularly with regard to the notion of emergent change and the need for connectivity across the institution (Seel, 2000). The result is a model for an integrated approach to change (adapted from Joughin and Macdonald, 2004) which provides a clear framework within which the culture of academic practice can be understood and influenced.

The Teaching Fellows work in complex adaptive systems (Battaram, 1998) with different cultures and politics, causing pockets of unpredictable behaviours as described in Zimmerman's (2001) Edge of chaos/zone of complexity. The implications for the complex adaptive systems, such as higher education (Tosey, 2002), are that systems function best "at the edge of chaos"; this is however uncomfortable for a "new and aspiring leader" who's prior experience was situated in the safety of their discipline. Yet, these aspiring academics are under pressure to deliver measurable impacts on the student experience. The Teaching Fellows/secondtees act as authentic practitioner voices encouraging dialogue between all stakeholders within the Faculties in the context of their own subject or

⁷⁵ UK definition of a Faculty is a group of departments

profession. In this way the Teaching Fellows/secondees fulfil key roles as change agents by taking a top-down directive (close to certainty and close to agreement (Tosey, 2002)) and making it work at local level through a bottom-up approach which is much closer to 'the edge of chaos' than to certainty and agreement.

Teaching fellows / secondees

This research is based on Teaching Fellows in three case studies; two Learning, Teaching and Assessment LTA) initiatives of Research Informed Teaching (RIT) and The Assessment for Learning Initiative (TALI) together with one Faculty based development. The initiatives employed a mixture of two year secondments and temporary teaching fellow posts, the Faculty based roles were permanent appointments. The Teaching Fellow appointments were made at Principal Lecturer level, with one exception.

A series of development opportunities were created within the initiatives and by the Faculty to support the academics' development. The Research Informed Teaching (RIT) secondees met with Professor Alan Jenkins to discuss the concepts of the research teaching nexus (see Jenkins, Healey and Zetter, 2007) followed by a peer supported abstract writing event and a funded 24 hour retreat. The Assessment for Learning Initiative (TALI) teaching fellows experienced an open space technology (Owen, 1997) based retreat to develop their action plans. This was followed up with a session led by Professor Sally Brown, Pro Vice Chancellor of Leeds Metropolitan University to articulate their plans. A follow up session was held later in the academic year on notions of leadership and what academic leadership means for them as leaders of change in their Faculties. One of the largest Faculties, Development and Society, also held a leadership development away day for Teaching Fellows across initiatives which included secondees from the Centres of Excellence in Teaching and Learning (CETLs). This event examined personal and professional development needs, concepts of leadership, initiative overload and soft project management skills.

The role description requires the secondee to develop and disseminate good practice within their own Faculty and across the institution, support individuals and project working within the initiative, alongside co-ordination of staff development activities to promote excellence in practice. These responsibilities have, in the past, been associated with Educational Developers within central Educational Development Units.

Research questions

The teaching fellows and secondees were asked to respond to the following questions half way through their secondment:

- In one sentence, how do you view your role in the Faculty and the University in terms of the people, connections and leadership?
- How has your role developed over the last 12 months?
- What do you feel are the key skills and attributes for success in your role?
- Do you feel that the TALI/RIT secondments have been successful in creating local authentic voices in the faculties? Please explain your answer.
- Looking back over the last 12 months in terms of your professional development. What have been the most useful activities that you have engaged in? Are there any other staff development activities that you feel you would have benefitted from?
- What development opportunities do you need to support you in your role in the coming 12 months?
- Looking forward – how do you see your career progressing when your secondment has finished?

Initial findings

The Role

Recognition of role

Recognising I have a voice, that I can make contribution and lead to people to change through workshop facilitation.

Lack of Power

To sum up in a sentence or more! I have a post at Principal Lecturer level, with no clearly identified managerial post and certainly no power. What changes I have made are the result of my personality, existing friendships and connections with other lecturers and module leaders.

Difficulty of time pressures

... a getting out and connecting role that was very difficult to achieve in the time allotted to it due to the size of the faculty and job

Constant change

However, in reality the role has developed in what can only be described as a 'rollercoaster' ride with lots of up hills, going against the grain, with occasional 'thrills' of satisfaction when changes/challenges have been supported/tried out and accepted.

Skills needed

Patience, ability to listen, observes, react quickly to information/events, negotiation, see the bigger picture.

The most important attribute to this role is the ability to make your presence known and to be able to articulate what you are doing to your colleagues. As with most roles of this nature you need a positive work ethic, good communication and inter-personal skills and the ability to finish tasks with drive and enthusiasm.

Political 'nous', by this, I mean knowing how to put managers in a position to work with you, and not see you as a threat/challenge to their position. I still feel that I lack this skill, I do not feel comfortable with the 'cut and thrust' style of management which to me only detracts from a person's authority. I prefer to negotiate and engage staff in the change unfortunately this has left me very disadvantaged at times.

Tenacity/determination/seeing things through to the bitter end, and a very thick skin.

Powers of persuasion

Confidence to speak out and keep on with a point

Communication skills, it would appear that being able to articulate your opinions in 'management speak' is important. Again I think I need to develop this skill. My approach to 'tell it like it is' has on occasions badly battered by the more articulate.

Participate in the changes yourself, not asking others to work differently/adopt changes without experiencing it yourself.

Ensuring that staff/student voices are heard i.e. recognising that you are speaking on behalf of others. My main aim is to enhance the staff/student experience so I need to continue irrespective of the response- hence the need for tenacity

The output from the Faculty based retreat identified similar needs to help develop leadership skills include evaluation methods and tools, soft project management skills, communication skills from writing funding bids to articulation at strategic and operational levels. People and influencing skills, such as coaching or mentoring were also seen as key requirements to engage resistant colleagues; their power of persuasion comes without the benefits of funding or management status. Key to the delivery of the output for the initiatives is knowing the acceptable measures of success, understanding the appropriate type of evidence from anecdotal stories to measurable impacts.

Development Opportunities

The 24 hour residential got us all off to a flying start and set-up some very useful relationships. I'm not sure that this was ever followed up as proactively as it could have been though

I am aware that other secondees have approached their role differently and I think it would have been beneficial to participate in recognised/documented peer support activities. Formally evaluating our experience half way through the secondment appears a little late. I do not feel that I have been managed or coordinated in this role at all, possibly this is not expected of a person at Principal Lecturer level. Consequently I have gone my own way and done what I thought was best.

Discussion

The Teaching Fellows roles do not fall within the remit of the institutional Human Resources management development programme, which is provided for staff with line management responsibility. The focus of academic leadership falls within learning, teaching and assessment and therefore aligned to the Educational Development Unit.

The tacit knowledge developed through the experience of secondments and development opportunities ought to be recognised by the individuals as Eraut's (2004) deliberative learning. The activities participated in during secondments had goals attached, which imparts a learning process. However, in many instances, the Teaching Fellows found themselves in situations which were ill structured or where goals were transient; this uncertainty required the Teaching Fellow to have a self awareness, drawing on prior experience and therefore a need to adopt Schön's (1987) reflection in action.

Meeting as a group provided the secondees with the opportunity to share experiences such as the challenge faced with lack of engagement from peers; this was often seen as surprising, yet predictable from an Educational Developer perspective. Peer support and informal mentoring provided an opportunity to develop confidence that this perceived negative response from peers was not a personal rebuff and enabled Teaching Fellows to share strategies for engagement. The group meetings also provide the opportunity for discussion at different institutional levels. This form of informal learning within the workplace is seen by Eraut (2004) as an integral for mid career staff but frequently not recognised as a development opportunity by those involved. All the Teaching Fellows were involved in operational interventions as well as the unfamiliar strategic level discussions. This transition between levels of discourse was one of the key development opportunities, or threats. Some have found the strategic "political" articulation onerous, yet necessary to ensure engagement with senior management. Writing strategies collectively reduced the perceived personal threat and meant that there was ownership of the strategy when communicating with Faculty senior management. Development of operational documents, distributed

and used by colleagues, raised the individual's profile which affords creditability and demonstrates experiential learning on behalf of the secondee with the articulation of changes made to own practice. This authenticity of practitioners talking about their own practice was beneficial to both the secondees and initiatives; sharing this form of tacit knowledge is more complex than at first perceived (Eraut, 2000; Fessey, 2002). Engaging in change and embedding it in own practice, alongside the articulation, develops the notion of Schön's (1987) reflection on practice and aligns to the UKPSF (2006).

Whilst informal peer support goes some way to developing leadership skills, the negotiation skills and personal confidence needed to work in alien disciplines remained challenging. Similarly, coaching and mentoring skills, part of an educational developers "toolkit", cannot be assumed. Personal acknowledgement that these proficiencies were not held, but were necessary, leaves the secondee exposed. For the Faculty based Teaching Fellows, a structured programme of development opportunities has been offered which includes principles and techniques for evaluation, scholarship of leading change, coaching and mentoring and further project management development. Professor Diana Eastcott, an experienced academic in the field of Educational Development and lecturer in coaching and mentoring, was recruited to provide mentoring for Faculty based Teaching Fellows. As an experienced Educational Developer she understood the nature of "difficult learning, teaching and assessment conversations", her expertise and neutral role within the institution was invaluable to the Teaching Fellow development. This was a voluntary scheme which was taken up by the majority of the Faculty based Teaching Fellows. Coaching and mentoring offer different skills sets; coaching aims to improve specific areas and the process is managed by the coach and mentoring primarily nurtures the potential of the whole person, with the use of feedback (Megginson and Clutterbuck, 2005). A peer mentoring scheme "Thinking Partners" was already available for senior managers within the institution under the Leadership Development Programme facilitated by the HR Department (Coggins and Campbell, 2007). This however does not address the specific skills required by the Teaching Fellows. For the central initiatives, opportunities have been provided to develop their reflective skills; others have taken up external awards through the UK Staff and Educational Development Association (SEDA) "Leading Educational Change" and UK SEDA Fellowship awards.

Other opportunities were provided through workshops on creating reflective portfolios of evidence to support applications for external teaching awards. It is anticipated that the articulation of achievement, measures of impact and the en-

agement in the reflective process when considering impact will benefit second-dees when applying for permanent Principal Lecturer posts. Eraut (2004) questions the time and space available for staff to think, the development opportunities through the retreats have provided space and time for this type of personal reflection. The change of pace from rapid decision making to deliberate and planned review was, for many, a new experience as there has been no requirement to develop reflective portfolios as a demonstration of professionalism within the higher education sector.

Continued involvement in informal learning for the Teaching Fellows was required. This allowed them to participate in groups which reviewed the policies on which they were the Faculty leads and exposed them to new challenges within a supported environment; this provided a means of developing confidence and experience (Eraut 2004). Continuing this within a group setting demonstrates the recognition and support for the roles from senior management and maintains the motivation to learn from others experiences (see Figure 1).

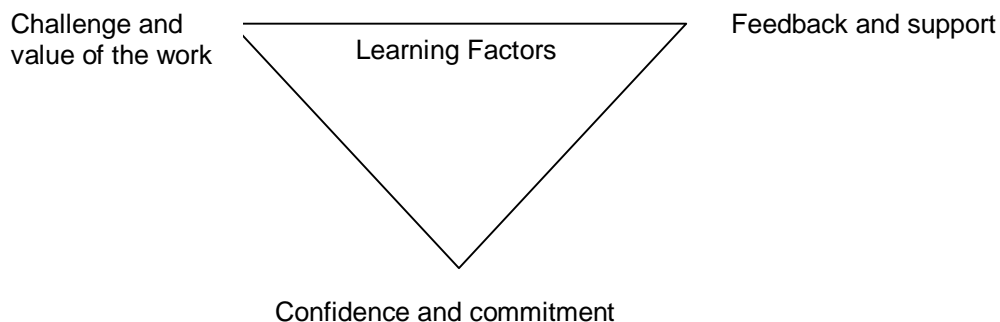


Figure 2. From Eraut (2004)

To maintain proactive involvement in isolation requires confidence similar to Bandura's (1997) self efficacy (Eraut, 2000). Richard Hill sums up his experience as a Teaching Fellow,

One of the significant outcomes of the past twelve months has been that I am now able to consider academic development issues that either did not exist for me, or would not have been possible before. This has come about through my own development, and more importantly, my colleagues' development, with a legacy of practice that has changed for the better. (Hill, 2009, p13)

The Future

The development outlined above is ongoing and a longitudinal study will be required to measure the long term impact of the Teaching Fellow Leadership development programme. One measure of success for the progress of these developing academic leaders will be seen through the delivery of their action plans at the end of the two year secondment and through the achievement of permanent Principal Lecturer posts. For the secondees, preparation for permanent Principal Lecturer roles will be measured by the success rate in career progression. To date two of the secondees have already achieved this; however it is recognised that future promotions may occur outside the current institution.

With cost an underlying factor in Higher Education, there is potential to employ experienced staff in learning and teaching roles who are due to retire within the next five years as a pool of mentors or coaches. Training and development would be required to equip them with the coaching and mentoring skills; this could provide support in succession planning and limit the loss of experience by recognising the potential academic resource available. It would also be both cost effective in terms of in-house development rather than external consultation and acknowledgement for experienced staff of the value and contribution to professional development.

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16 The Brain and leadership in the creative company

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Leadership as a complex system

A cartoon description of the goals of leadership and neuroscience might read respectively “How to lead companies” and “How the brain works.” Traditionally, there is little overlapping in the vocabularies employed by each domain (See Montague ???). Leadership is one form of human's behaviour. Traditional view to describe and to explain human behavior is to focus on a specific level of a behavior. Thus, scientists in social psychology, sociology and business management deal behavior with social level. Consistently, scientists in psychology and cognitive science deal a behavior with a cognitive and mind level. And finally, neuroscientists and molecular biologists deal a behavior with a neural and a molecular level. Thus most behaviour models try to describe and analyze behavior at just one level of behaviour. On the contrary, Thagard (1999) emphasizes, that behaviour is results of complex system, in which all levels from society to molecular transformations are important in the production and regulation of behaviour. Thagard explains behaviour as a complex system and his assumption is that there are multiple and bi-directional interactions between the levels of behaviour.

In this paper, we present a theoretical framework of how companies can benefit from the knowledge relating to human brain structure and functions.

In first chapter, we describe the concept of creativity. In second chapter, we describe general brain model based on somatic marker hypothesis (Damasio 1994; Bechara & Damasio 2005). In third chapter, we describe, how does the brain produce creative representations. And finally, we introduce four evidence-based principles for excellent leadership.

The concept of creativity

The ability to create better than other organizations will soon become the most significant competitive advantage companies and organizations can claim. In innovation economy companies simply can not survive without creativity – each innovation requires a novel idea that has to be created, and the implementation process requires finding new solutions to new uprising problems (Taatila, Suomala, Siltala and Keskinen 2006). What, then, do we really speak about when we speak about “creativity”?

Creativity is a process whereby an individual or an organization exceeds a conventional habit (Suomala, Taatila, Siltala and Keskinen, 2006). A conventional habit includes typical actions, goals and knowledge in a domain. Professional experts in a particular domain have learned essential skills and thinking habits of this domain. Thus, experts do what coheres with existing knowledge and beliefs in their domain; their work involves filling in the details on matters that are basically already understood or applying standard techniques to new specific cases (Alvarez, 1998). Our thinking habit is born in culture, where we have lived. However, from creativity point of view, the individual's thinking is essential: without humans' skill to create new representations there are no novel innovations. Thus, we need to ask an interesting question: how does an individual change conventional habits for a novel route?

A creative process begins when an individual encounters a puzzling phenomenon. A phenomenon can be puzzling in two ways. First, in case of expected finding, the phenomenon fits with human expectations relating the future. Second, in case of unexpected finding, phenomenon is not coherent with the individuals cognitive and belief system and it breaks the conventional habit of a people. Thagard (2002) argues that puzzling phenomena produce emotions and in this way emotions play a large role in creativity in science, technology development as well as in other domains. Also practical need and frustration produce emotional curiosity and can break a conventional habit (Santonen, Kaivo-Oja & Suomala 2009; Suomala et. al. 2006).

Traditional economics theory and game theory approach make distinction between definitory rules and strategic rules of any goal-directed activity that can be conceptualized as a game (Hintikka 1999). For example, the definitory rules of chess tell player how chess pieces may moved on the board, what counts as checking and checkmating. According to Hintikka (1999) these rules define the game of chess. In addition, the strategic rules of chess tell the player how to make the moves, in sense of telling which of the numerous admissible moves in

a given situation are advisable. "They tell you what is good play and what is bad play, if not absolutely, then at least relatively." (Hintikka 1999, 2). Glimcher (2004) argues that a bridge can be built between the brain and behaviour by adding the concepts of bayesian statistics and irreducible uncertainty to classic game theory. However, there are three problems with this game theoretical approach. Firstly, in ordinary life and in many areas of science less mathematical than game theory, the behavioral options has more alternatives than options in games. Secondly, it cannot explain how the human brain can produce totally new "games" (cultural artefacts, new scientific theories, innovation ideas), in which the probabilities of gain and cost are completely uncertain, and where the players of the new game are unknown (Suomala 2008). Thirdly, none of these theories have addressed the neurobiological mechanisms underlying this creative behaviour.

To solve these three problems we have to introduce a third principle for game theoretical/ economics approach. When brain's adaption mechanism learn definitory and strategic rules of culture (conventional habit), creative mechanism try to create rule-breaking principles, in which cultural definitory and strategic rules are changed or new ones are created. The prerequisite for production of rule-breaking rules is that brain can produce creative representation. We describe this theme again after next chapter.

The brain as a joint space for thinking and emotion

The Somatic Marker Hypothesis (SMH) (Damasio, 1994; Bechara and Damasio, 2005) is based on the argument that rational decision-making depends on prior accurate emotional processing. These somatic markers have a strong effect on the individual's interpretation of a specific stimulus or a whole situation. Emotional signals assist humans during the decision-making process by rapidly highlighting options that have positive predicted outcomes and eliminating from further consideration options that have negative predicted outcomes.

Studies (Bechara and Damasio 2005; Damasio, 1994) have provided neurobiological evidence in support of the notion that people often make judgments based on "hunches", "gut feelings" and the subjective evaluation of consequences. The SMH has challenged the previous belief that there was a sharp divide between emotional thought and rational cognition.

Thus, a decicion-making has both emotional and rational components of the brain and body and these components forms many potential neural circuits in the brain. The structural parts of this circuit are amygdala, ventromedial prefron-

tal cortex (vmPFC), brain stem and somatosensory cortices (insular/SII, SI cortices, and cingulated cortices).

In addition, neurochemical mechanisms – neurotransmitter - are essential drivers of human behavior. Main neurotransmitters are dopamine (DA), serotonin (5-HT), noradrenaline (NA) and acetylcholine (Ach) and their cell bodies are located in the brain stem (Fox 2008). The axon terminals of these neurotransmitter systems interact with cells throughout the brain and body. Fox (2008, 184) explains: “ The neurochemical mechanism therefore provides a plausible means by which somatic states could exert a strong biasing effect on a range of behaviours, feelings and cognitive processes.”

Thus there are multiple connections in the brain between the amygdala and the vmPFC, and the cell bodies of the major neurotransmitter systems within the brain stem.

The central idea of SMH is that somatic states can be triggered by both primary inducers and secondary inducers (Bechara & Damasio 2005, Fox 2008). Primary inducers are innate or learned stimuli that cause positive or negative emotional states. Secondary inducers are memory of a real or hypothetical primary inducer, which when brought into working memory can itself induce a somatic state.

Primary inducers (e.g. to be first time in a situation, in which something rewarding or shocking happens) activate the amygdala directly. The amygdala in turn triggers a somatic state by causing the release of several neurotransmitters in the brain stem areas. The amygdala couples the features of primary inducers with somatic states associated with inducers. The information from primary inducers via amygdala to the somatic states can be processed subliminally via the thalamus (Bechara & Damasio 2005, LeDoux 1996) or explicitly via early sensory and higher-order association cortices (Bechara & Damasio 2005).

Bechara and Damasio (2005) emphasize, that once somatic states from primary inducers are formed signals from these somatic states are relayed to the brain. “Signals from activated somatic states lead to the development of somatic state patterns in brainstem nuclei (e.g., the PBN), and in somatosensory cortices (e.g. insular/SII, SI cortices, and cingulated cortices).” (Bechara & Damasio 2005). After a somatic state has been triggered by a primary inducer and experienced at least once, a pattern for this somatic state is formed in brainstem nuclei.

Secondary inducers (e.g. the recall of a personal or hypothetical situation, i.e. thoughts and memories of the primary inducers. For example memories of a situation in which something rewarding or shocking happens) produce somatic states via

cortical circuitry of vmPFC. Bechara and Damasio (2005, 341) emphasize that VM cortex serves as a convergence-divergence zone. It couples knowledge of secondary inducer events to somatic patterns related to “what it feel like” to be in given situation.

The SMH concentrate to explain, how does the human brain and the neural system couple rational and emotional processes in the brain and body. It proposes that the production of somatic states biases cortical processes towards beneficial responses and away from risky decisions. From organizational culture point of view, it is important to remember, that the work environment and atmosphere effects for employers dispositions toward work and emotional dispositions relating to work organization is important trigger for comfortableness in workplace.

The cultural situations have a strong effects, how does our preferences formed and developed from situation to situation and also as a function of the time. Human behavior is best understood in terms of the plans and goals that people are pursuing (Fox 2008). Humans are unique in their capacity to form representations of a future situations. The willed control of the decision-making process involves dynamic emotional and cognitive analyses of past and expected events (Peoples, 2002). Thus, emotions play a critical role also in forward-looking behavior, not only in current situations (Camerer et al., 2005). Thus, a critical aspect of human behavior is the ability to formulate a representation of potential future states and to manipulate the images in ways that enable the simulation of control-related behavioral strategies (Geary, 2005). Thus intentionality and goal-setting are essential aspects of human life, and one important feature of these goals is that they are like a stored form of longer-term valuation about each state of the world, because they represent the long-term rewards expected from that state into the distant future (Montague et al. 2004). In this way human can use the representation of future situation (goal) to control their actions in order to optimize their rewards.

People make decisions by comparing the current situation to an representations of future situations. This ability to “cast oneself as a player in scenarios emerging from various choices available at any given moment” facilitates the self-regulation of behavior necessary for the achievement of personally relevant goals (Geary 2005, p.200). Humans’ ability to envision themselves in a specific future scenario has received much less attention than the remembrance of past experiences (Szpunar et al., 2007) in decision-making and organization culture litterature.

Thus the secondary inducers are not only from external situations but also from our inner representations, personal goals and intentions in our mind. Personal goals are dispositions belonging to the “dispositional space”, being like “the town of Brigadoon waiting to come alive for a brief period”(cf. Damasio, 1999, p. 332), and that these dispositions have neurological bases. In suitable situations, the dispositions will be activated.

The brain as a space for creativity

The description in the chapter is based on the neurophysiological models of Crush (1997), Bechara (Damasio 1994, Bechara and Damasio 2005) and Montague (Lohrenz, McCabe, Camerer and Montague 2007).

One of the most essential functions of the human brain is to produce counterfactual representations of events, facts and social states. The human brain's ability to produce counterfactuals is probably a source of discovery and creativity.

In psychology and in cognitive science, a concept of a representation is understood entities which stand for something else (Markman ???). However, Grush (1997) argues that a representation is better understood as entities which are used to stand for something else. In this way, the user of representation is important part of the representation process. According to Grush (1997), a representation is a part of a three-way relationship which also includes a user and a target.

In addition, Grush argues that the problem is that a representation has been understood only as a sensory state. He writes :

”Specifically, sensory states have been used as a model for representational states, the idea presumably being that sensory states represent the world to the subject.” (Grush 1997, 8).

He continues and emphasizes that a useful theory of representation must not treat sensory input as representational. Grush uses two concepts: mental models relating to sensory inputs are presentations and mental models relating to counterfactuals are representations. Grush (1997)

In this way he divides mental models for two categories. Presentation means sensory-driven mental model, in which brain try to form meaning of “real” situation. On the contrary, representation means future-driven mental model, in which the brain forms model of the future possible situations.

Grush (1997, 8-9) gives example of chessplayer. An individual (player) is playing a game of chess with an opponent. However, the player is not in the immediate vicinity of her opponent or the chess board. Rather, the player is at some other location where she learns about her opponent's moves, and issue her own moves, via the telephone. Figure 1 exemplifies the analogy.



REPRESENTA- TION



PRESENTATION

The presentation board in Figure 1 is to accurately mirror the state of the official chessboard. The success in the game depends on, how accurate the information of the official board is. The usefulness of the representation board in Figure 1 is that by with this board one can try out moves and then put the pieces back before making the official move (Grush 1997). Grush (1997, 9) explains:

“But note that what one is doing in this case is putting the same board to the two different uses I described. One uses the board now to present the real game position, and now takes it 'off line' to try out moves. According to the theory I will advance, only the second board is a representation, the first can perhaps be described as a presentation.”

The example of a chessboard makes the difference between presentation and representation fairly clear and understandable. A presentation is used to provide

information about some other, usually external in some sense, state of affairs. The presentation is usually causally linked to the target, f.ex chessboard, in some way.

However, the representation is used as a counterfactual presentation. "It is a model of the target which is used off-line to try out possible actions, so that their likely consequences can be assessed without having to actually try those actions or suffer those consequences." (Grush 1997, 10). Thus the brain use an entity as an off-line and it is not being causally linked to the entity it represents.

Grush description of the brain's capability to form counterfactuals is essential argument from creative point of view. Thus the brain can act on-line and off-line. The SMH (Bechara & Damasio 2005) describes two different pathways of the brain. The primary inducers forms pathway from sensories to the amygdala. The amygdala send information signals to the brainstem and triggers neurotransmitters. In the same time brainstem present signals from body and to the ventromedial prefrontal cortex and to the somatosensory cortices (insular/SII, SI cortices, and cingulated cortices). When this happens at least once, an individual can activate this pathway with memory without real primary inducers (stimulus).

Thus, the VMPFC, amygdala and hippocampus are critically involved in the production of somatic markers, and decision-making is guided by emotional (somatic) signaling generated in anticipation of future events (Bechara and Damasio 2005). These emotional parts of the brain assist in decision-making (Bechara & Damasio, 2005).

In addition, Bechara and Damasio (2005) argue that the brain forms representations of both the body and the environment. The interaction between these two types of representation in the brain is a source for the "as-if loop" neural pathway, which generates new alternatives for future events. The as-if loop is formed in the amygdala, hippocampus and ventromedial prefrontal cortex. "As-if loop" is one circuit in human brain which produce counterfactuals and creative representations.

Also Montague (Lohrenz et. al. 2007) shows that on a neurophysiological level, after decision-making, the brain produces fictive error signals related to counterfactuals. Based on these fictive signals, we evaluate the validity of our decisions spontaneously. After this process we feel happiness or regret based on our personal experience of the fictive alternative. This fictive signalling process is a source of creativity and discovery in the human brain. Fictive signals have a neural correlation in the ventral caudate.

The common feature of the previously described models is the idea that creativity is based on a subjective, personal experience of the subject's own future possibilities. Counterfactual thinking is probably a source of human creativity. Even, creative representations are very subjective and human evaluate the value of his/her creative representation (idea) based on subjective and emotional feeling, the culture and immediate environment effect strongly for individual. If individual knows that it is not any possibilities to apply creative idea, he/she feel new ideas as dispensable and continue to apply conventional habit. On the contrary, if environment support creative ideas, individuals are more sensitive to share creative representations to social environment.

Application of brain model to management

Management can emphasize either conventional habit or creativity. Creativity has always been at the heart of business, but until now it has not been at the top of the management agenda. The management challenges involved in organizing for creativity and leading people in creative companies differ significantly from the challenges of organizing repetitive work in traditional companies. Neuroscience informs us that creativity is natural part of brain and with organizational activity, and that firms can find suitable tools to support creativity thinking and innovations. Based on previously described brain model, we suggest four principles.

1. Endowment effect in organizational culture. Because creative representations are subjective and emotional (Damasio 1994, Bechara & Damasio 2005), the company should support atmosphere in which workers can feel and act in entrepreneurial fashion.
2. Individuals value own behavior based on subjective goals and reference points. If an employee feels that his/her goals and firms goals are consistent, he/she would like to share his/her ideas inside company.
3. Emotions are an essential part of decision making. If an employee accepts firm's strategies and goals, his/her emotions and dispositions are consistent with the goals of firms. Thus emotions are in line with the organizational strategic goals and beneficial in creating new innovations..
4. Creative action (rule-breaking principle) leads uncertain decision path, because the definitory rules and strategic rules ("whole game") are unknown. A human naturally prefers more certain decision path than the

uncertain decision path can offer. If creativity is necessary to the firm, the firm needs to organize a cultural environment in a way that workers feel uncertainty as a positive possibility. This means that losses after taking risky choices are not dangerous from the point of view of an individual employee.

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IV WORKSHOP

Learning culture

17 Winning and Educating Technical Talents at Brno University of Technology

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Abstract

The Czech Republic has always ranked among countries abounding with technically educated experts and skilful technicians. This ranking, which accounted for this country's goodwill worldwide, has been declining over the past decade. Insufficient attention devoted to technical secondary schools resulting in lower interest in study at technical colleges has brought about a lack of graduates with a great deal of them seeking jobs outside their study specialization. Of most alarming gravity is the exodus abroad of the most talented graduates.

The primary interest, common to the industrial sphere and the educational institutions - should be to win, educate, and keep technical talents for research and development as well as practical applications in the Czech Republic.

This is a problem faced by both universities and companies. For this reason, these institutions sign cooperation agreements. There is an increasing number of links with a search for such forms of cooperation as would provide for an effective transfer of information and contacts.

It is the purpose of the **"Winning and Educating Technical Talents in Cooperation of Technical Universities and Industrial Enterprises"** project to discuss the possibilities of cooperation and address related open issues.

We see the complexity of its approach as this project's major contribution. In the past, contracts between industrial enterprises and universities were focused on

dealing with the technical issues. This project, however, stresses communication as the basic prerequisite for successful work on this task.

Current situation

Currently, all of the parties participating in the "industrial-enterprise-university" type relationships, that is companies, students, and teachers, have to overcome several communication tiers to get access to information and opportunity to work on a particular problem. Apart from a considerable time delay, also a great deal of red tape is created.

This project concentrates on the creation of a system enabling direct contact with the support of the managements of both the faculties and the companies. It may be expected that the students interested in technical issues at companies are active, resourceful and hardworking with some motivation and, as such, may be viewed as talents.

Why do we work on this project? This project intends to attract and motivate students and graduates-to-be to take engineering jobs. Via a university server, students should get involved in work on particular problems of companies for their knowledge to be improved and for them to be offered opportunities for self-fulfilment.

What do we want to resolve with this project? The project aims to advance the formal relationships between universities and the industrial sphere to a practical level removing communication barriers. The project would like to offer a system that can involve and capture the interest of students and motivate teachers to cooperate with companies.

In this paper we are mostly concerned with that part of the project which is focussed on data collection, empirical investigations, analyses, and evaluation of results. A major theme is a comprehensive analysis of information obtained from questionnaires distributed among 1000 students in a qualitative inquiry.

In the subsequent one-year period, the project will further be concerned with a system encouraging search for talents and the interests of young engineers.

Research method

As part of the Winning and Educating Technical Talents at Brno University of Technology project, an enquiry was made in the autumn of 2008. The BUT Faculty of Business and Management is the solution provider of this project.

The research was conducted at two independent levels. A major theme is a comprehensive analysis of information obtained in a qualitative inquiry. A subsequent qualitative research was then carried out.

Quantitative research

In October and November of 2008, a questionnaire enquiry was made at selected faculties of Brno University of Technology. This questionnaire enquiry involved a sample of 951 mostly fourth- and fifth-year students. A total of 791 male students and 160 female students took part in this empirical investigation.

The following faculties were involved:

Faculty of Mechanical Engineering – 158 students,

Faculty of Electrical Engineering and Communication – 205 students,

Faculty of Information Technology – 250 students,

Faculty of Chemistry – 33 students,

Faculty of Business and Management – 305 students,

The questionnaire was directed towards the following areas:

- how the students are motivated by and satisfied with their studies,
- how the students are prepared for their future jobs or whether they have sufficient information on their future jobs,
- whether they intend to continue their studies as doctoral students.

The empirical investigations focussed on students were complemented by a qualitative research at the company level.

Qualitative research

A qualitative research was conducted in the autumn of 2008 to determine how it could be possible to improve cooperation between companies and universities (particularly Brno University of Technology). Representatives from companies such as IBM, Siemens, Kuličkové Šrouby Kuřim a.s. were among the participants.

The enquiry was directed towards the following areas:

- whether companies are interested in cooperation with universities,

- what, in their opinion, are the biggest obstacles,
- what are their requirements.

Results of quantitative research

As mentioned above, the quantitative research was conducted by a questionnaire enquiry among BUT students. Based on the data collected, areas were identified with the most interesting results and further presented as diagrams.

1. My major motivation to study is:

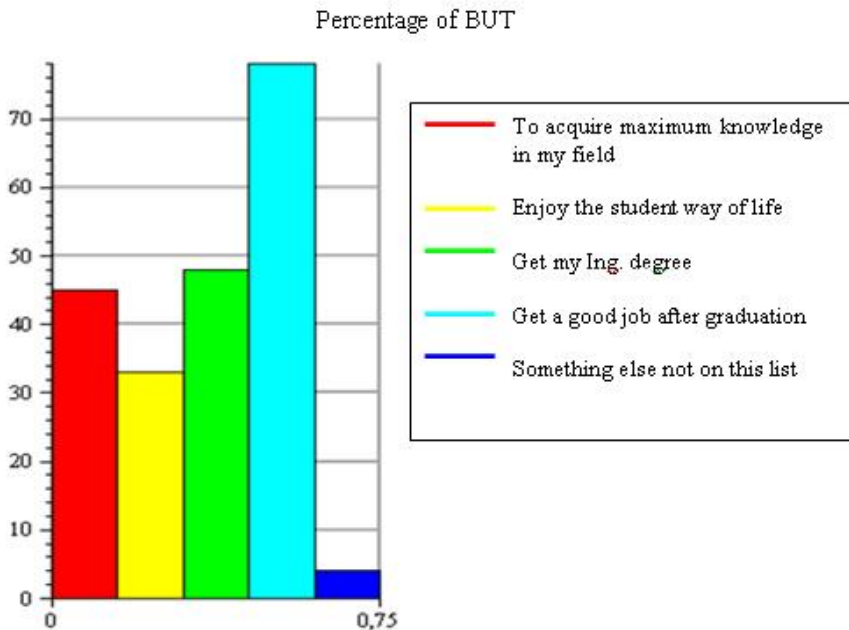


Figure 1. My major motivation to study is

Finding a good job after graduation was the students' major motivation. This is also the reason why the students wish to acquire maximum knowledge in their specializations to be used in their future professions. It seems, however, that they are much more interested in being awarded the academic degree of "Ing". Thus the students believe that it is the degree, rather than the knowledge ac-

quired, that will pave the way for their good jobs. For some students, motivation for studying seems to be the student life full of attractions.

2. During my studies:

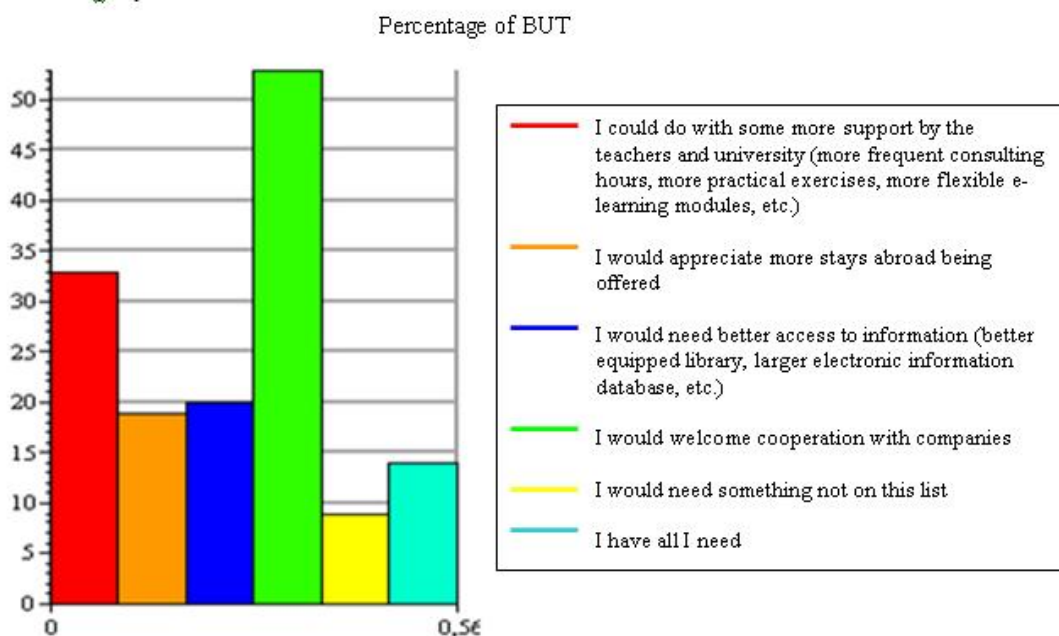


Figure 2. During my studies

The above student answers are among the things testifying to the fact that there are certain problems with cooperation with companies at BUT, same as at any other Czech university. The diagram shows that what the students would appreciate most during their studies is cooperation with companies, which is yet insufficient here.

Even if the answers to the question: "Who is providing you with the most professional support for your study?" mostly indicated teachers, the support provided could still be more extensive including more frequent consulting, practical exercises, more flexible e-learning modules, etc.

Next the students could do with a better equipped library or more extensive electronic information database.

Students would also welcome opportunities for stays abroad (even if there are opportunities of this kind at BUT not fully used by the students).

There were also students answering that, concerning their studies, they had all they needed.

Students answering that they would need something not on the list were those wishing for more time, individual approach, contacts with other experts, language courses, and more internships.

3. I believe that it will be easy to find a job after graduation:

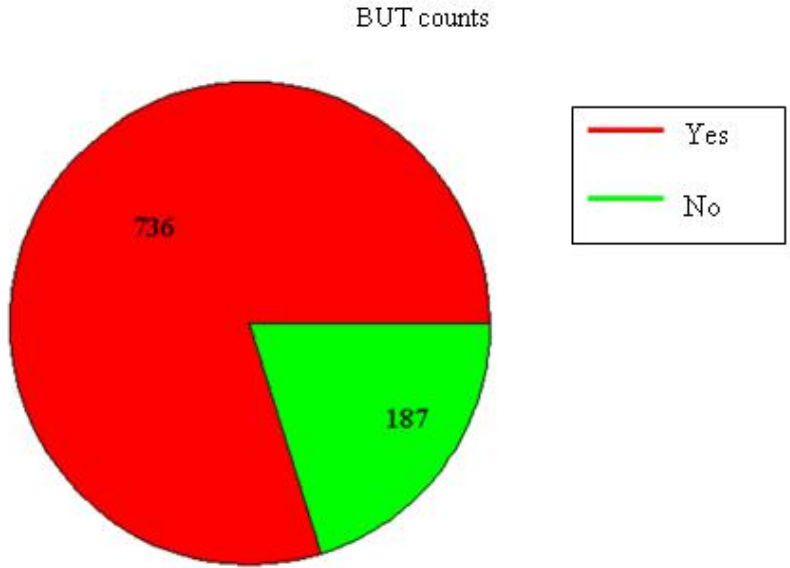


Figure 3. I believe that it will be easy to find a job after graduation

The above diagram shows that most of the students believe that they will find good jobs in their specialization even in the future. This correlates with answers to question 1, "My greatest study motivation is", with a majority of students answering that getting a good job is the greatest motivation. Most of the students who do not believe that they will find a job in their specialization after graduation refer to intense competition for jobs. They also voiced concern about the current economic slowdown fearing that nobody will be interested in new graduates without any previous experience.

4. The following will influence my decisions when looking for a job:

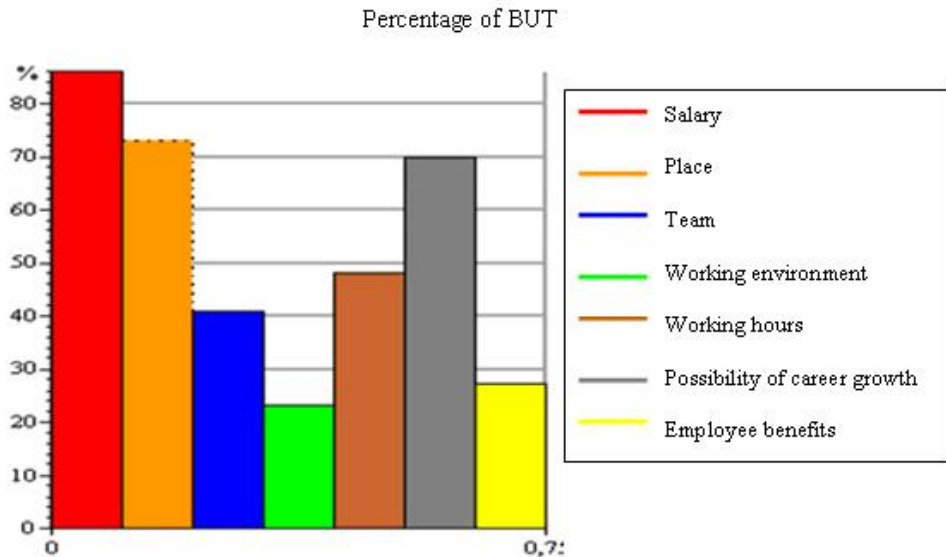


Figure 4. The following will influence my decisions when looking for a job

When selecting their future occupation, students are mostly interested in the salary offered by the future employer. Next on the list is the work place, which is also quite important for the students. Career growth opportunities follow closely.

Also important seemed to be sliding working hours and flexible beginning of working hours tailored to suit individual requirements. Team is another factor important for the students. This may be accounted for by a good team usually guaranteeing better work and performance. Although employee benefits are also important for the students, they are not seen as a major motivation. What seems to be the least attractive factor in the students' decision-making is the equipment of the workplace.

5. If possible, I would choose the place of work:

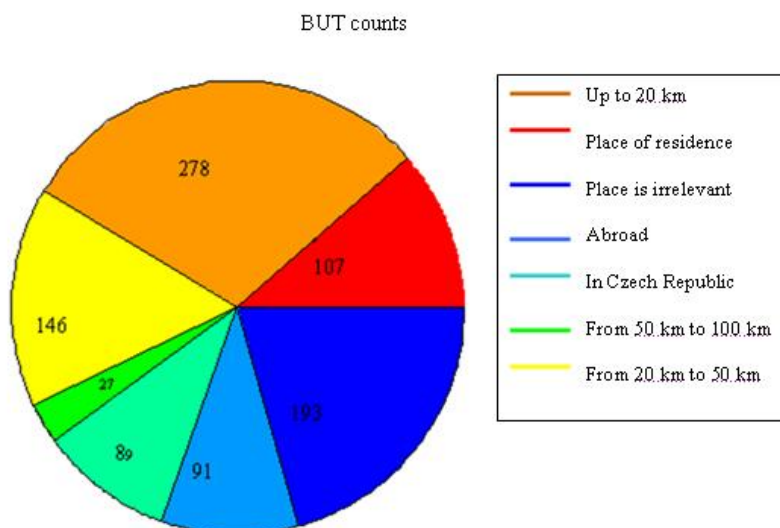


Figure 5.: If possible, I would choose the place of work

The place of work seems to be of key importance for the students. Most of the students were prepared to commute up to 20 kilometres. There was also a large group of students prepared to move to find a job without any concern about the place of work. However, there are also students refusing to move, looking for jobs only in their place of residence. Even though students are interested in stays and language courses abroad, there is only a minority of those willing to work abroad.

6. During my studies:

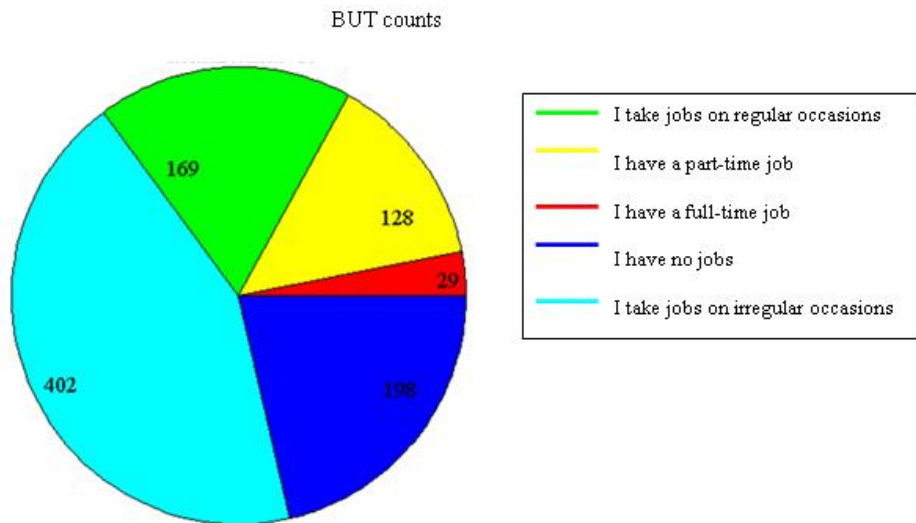


Figure 6. During my studies

As the above diagram shows, most of the students already have a job experience. Most of them take jobs on irregular occasions. These involve holiday jobs and on-the-job training. Concerning this question, it was interesting to see the answers of students at individual faculties and the differences between the work experiences they had. Thirty-five percent of the students of the Faculty of Business and Management take part- or full-time jobs, 55 percent take occasional jobs and 10 percent do not take any jobs at all. The situation is quite different at the Faculty of Chemistry with no student having a full-time job while a large percentage (30) of students have no job experience. At the Faculty of Electrical Engineering and Communication, things are much the same.

7. When looking for a job, I would appreciate:

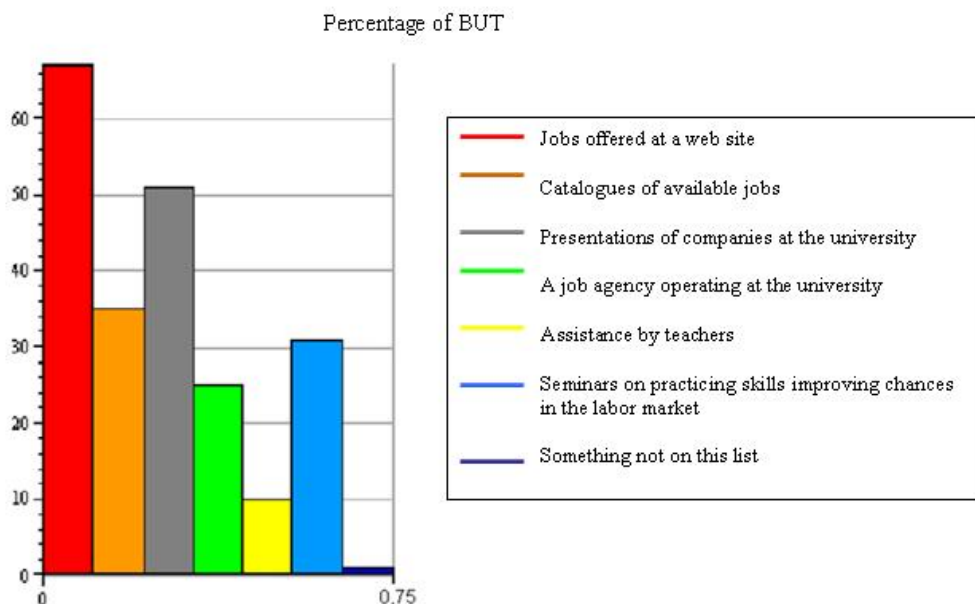


Figure 7. When looking for a job, I would appreciate

Note that, when looking for a job, students would appreciate most jobs offered at a web site. Knowing this was a great help for working on our project. It confirmed our hypothesis that building a portal offering jobs to students will be of great value and use. We were somewhat surprised to find out that the second largest group of students would appreciate presentations of companies at universities. Such presentations could be related to the much desired lectures of practical experts. It is also interesting to see that students would like to ask a teacher for help who could hold seminars on practicing communication skills helping graduates find jobs easier. Teachers could also provide the students with contacts to cooperating companies or the companies with references to students.

8. Top companies are successful in searching for talented students:

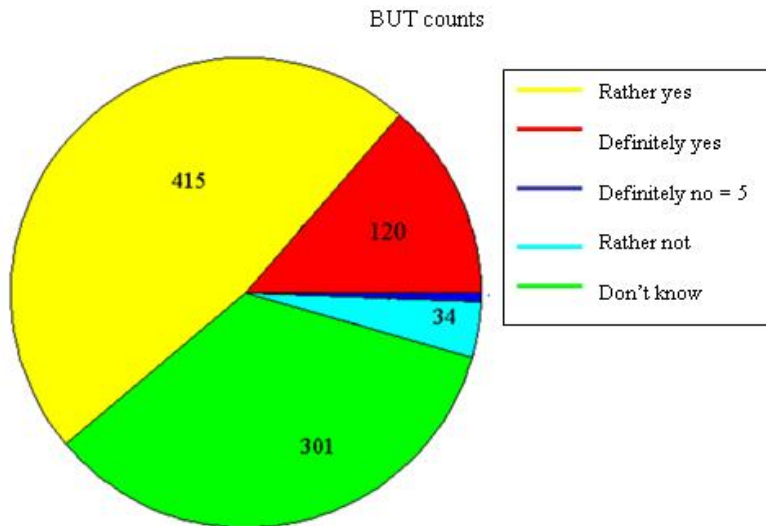


Figure 8: Top companies are successful in searching for talented students

Almost two-thirds of the students believe that companies can find talented students and train them to become promising employees. The majority of the students are indifferent to this question, which may be the result of little experience with companies. Only five percent of the students think that companies cannot find talented students or suitable potential employees.

9. I am interested in my specialization:

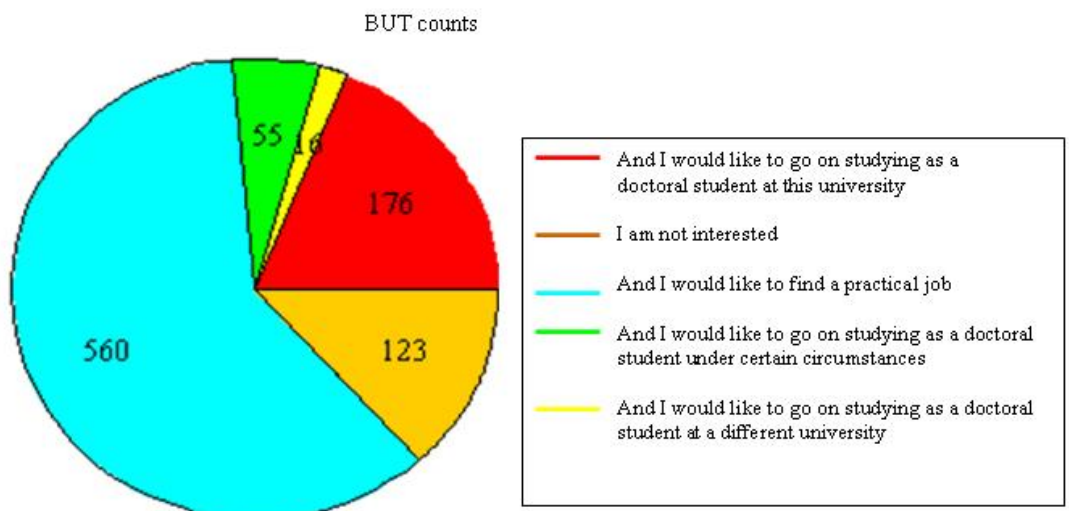


Figure 9. I am interested in my specialization

BUT students are so interested in their fields of study that most of them would like to find a job in their specialization. Some of the students would like to go on studying this field as doctoral students. Other students would also prefer studying doctoral programmes but provided that they get a salary higher than the average one, which is rather low in the Czech Republic. However, there were also students not interested in their field of study.

Results of qualitative research

As mentioned in the Research Methods chapter, the qualitative research using a sample of 3 companies was divided into three areas. Whether companies are interested in cooperation with universities (BUT in the first place), what in their opinion, are the greatest obstacles, and what are their requirements.

It turned out that companies are interested in cooperation. Important is, however, the size and purpose of a company. Some companies see in graduates or students people unbiased by practice in favour of certain working habits or a particular corporate culture. These companies would like to train their new employees regardless of the amount of investment put into the training programmes. Other companies, in turn, require that their new employees should have several years' previous experience in their field, which means that they are not much interested in students or graduates.

The companies see major obstacles to cooperation with universities in the universities pursuing interests different from those of the companies. What the companies claim is that universities have their own accredited curricula disregarding any practical requirements. Neither are they satisfied with the students' language and communication skills.

What is also seen as a stumbling block by the companies is little profit brought by students working on their Bachelor's or Master's degree projects with them. Not always do such projects add any value to the company's assets. The companies claim that students are mostly motivated to defend the project at the university rather than to bring profit to the company. This problem may also be due to the fact that the universities' primary orientation is to basic whereas that of the companies to applied research.

Supervising the students at companies also brings extra work for the employees. A company usually has a "critical number employees" while a student's supervision requires extra time otherwise devoted to work for company.

Students also work on their projects over longer periods of time than companies can afford. For example, a student may work on a project one year whereas the company can only afford several months.

Another problem in some companies is that if a student is to be allowed to work on a degree project with the company, another project needs to be created by the company itself. This project must be worked on by a company employee. But the company may not be able to recruit extra new employees. Even if this is possible, tenders need to be invited with the student having to sit for an interview with no guarantee that she or he will meet the company's employment conditions.

Next there is a problem with copyrights. Both universities and companies want the copyrights if any to be theirs. If a student works on a project which published later on as a Bachelor's or Master's degree project, the company will lose its competition edge.

Unfortunately, there is no law in the Czech Republic governing students' internships. Currently, companies do not even consider employing students in this way. Students only take full-time or part-time jobs with companies as rank-and-file employees without any links whatsoever with their university.

What the companies require most of all is that university curricula should be modified for students to be better prepared for practical jobs. They would also like to participate in teaching, for example, through lectures held by their key experts.

They would also appreciate references to students by the university. Also profiles of students at web sites are called for to provide leads for companies to select their potential employees. The companies would also like to have a contact person in charge to negotiate on behalf of a university or a faculty.

Summary of the key issues:

Legislature governing the copyright of a Bachelor's or master's degree project.

Little practical value of Bachelor's and Master's degree projects.

Condition of a student's employment by the company, which should, at least partially, serve as an incentive for the student to add some value to the company's assets by her/his degree project

A company should participate in selecting themes for Bachelor's and Master's degree projects

Students are insufficiently directed towards the practical impact of their Bachelor's and Master's degree projects.

The universities neglect practical applications of results.

Companies require references to students from universities

Students' insufficient communication and language skills

Contact person appointed by BUT to deal with cooperation with companies

Students' and graduates' profiles published at a web site

Experts participating more in teaching

Discussion

Based on an empirical investigation, it can be seen that students, companies, and universities want to cooperate.

This project is directed at three target groups: students – teachers (universities)- companies. Thanks to these investigations, a critical factor has been identified: insufficient cooperation between universities and companies.

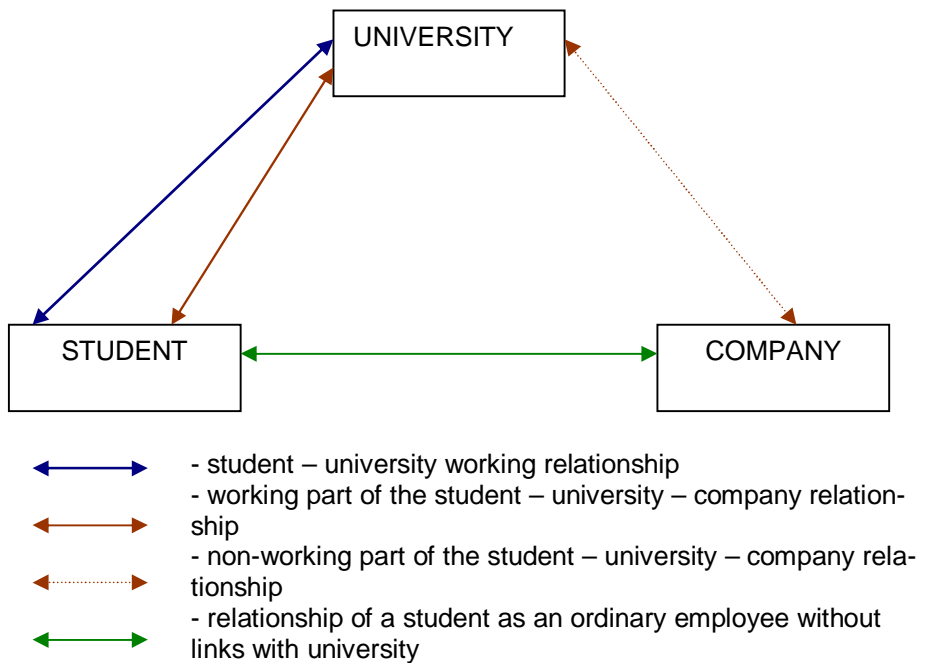


Figure 10. Relationships between student – university - company

The student-university relationship is the most balanced and best-working one. It has been shown that students are interested in study fields offered by Brno University of Technology. Students also believe that they can find jobs after graduation related to such fields or that they can go on studying as doctoral students.

The student-company relationship does exist and work but without the university participating in it. The students themselves answered that what they would appreciate most of all is cooperation with companies during their studies. Many students take jobs during their studies, but as rank and file employees rather than as representatives of Brno University of Technology. Thus they cannot enjoy the benefits they would get if the university acted as a go-between in this relationship. The benefits in this case include internships, work on Bachelor's or master's projects, inclusion in a group of talented students, etc.

Insufficient cooperation between universities and companies proved to be the weakest link with universities currently not being able to offer talented students to companies and companies not knowing whom to address when searching for such students. Companies would also appreciate the existence of a contact person at a university to be in charge of cooperation. The companies also lack opportunities for their experts to hold lectures at universities from time to time for providing consulting and neither do they obtain references to students as their potential employees.

Conclusion

The project entitled **"Winning and Educating Technical Talents in Cooperation Between Technical Universities and Industrial Enterprises"** envisages a system of long-term cooperation between technical universities and the industrial sphere.

Based on empirical investigations, the second project stage is being worked on consisting in overcoming the barriers identified and described, particularly the insufficient communication between the academic and the industrial sphere. What is particularly being built is a portal to be used by BUT to provide its students with more opportunities for cooperation with companies and to further develop links with industries.

Resources used

Winning and Educating Technical Talents in Cooperation Between Technical Universities and Industrial Enterprises. Project submitted as a research and development tender. National Research Programme II, Ministry of Education, Youth, and Sports, 2008.

18 Models of Learning by Developing

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Abstract

The Learning by Developing (LbD) models of this study enhance the integrative role of action in the realization of the three statutory tasks of the Finnish universities of applied sciences: education, research and development, and regional development. This study presents development and integration models for integrating the three tasks from the perspective of collaborative action and development work, and through the use of information intensive learning environments. The described models are: 1) A value network model from the perspective of participation; 2) a description of the Finnish innovation system and triple helix model; 3) The Onion model or cooperation model in regional development; 4) The Learning by Developing (LbD) model from the perspective of learning culture; and finally, 5) the model of design research and design science implementation in a Learning by Developing culture. The design research, development and analytical work was carried out from 2001 to 2009 at Laurea University of Applied Sciences in Espoo and in cooperation with the Helsinki metropolitan area.

Keywords: Regional Development, Learning by Developing, Value Networks, Triple Helix

Introduction

The implementation of the integrative process points to the transformative full duplex usage of cyclical innovation activities and linear development orientations that possess quality and relevance. The perspective of learning is approached through the three metaphors of learning: (1) knowledge acquisition, (2) participation, and (3) knowledge creation (Paavola, Lipponen and Hakkarainen 2004). In

this application, each of the metaphors has its distinct focus, theoretical assumptions, and units of analysis. There are no clear-cut theoretical and methodological boundaries between these approaches. The three metaphors are not exclusive as all of them are needed to successfully consider learning processes. These metaphors cannot be prioritized from weakest to strongest, because they answer different kinds of questions in attempting to explain the complexity of human cognition and nature. Figure 1 gives an introduction to the three implemented perspectives of learning dealt with in this article.

<u>Three Perspectives of Learning</u>		
Knowledge Acquisition (1)	Participation (2)	Knowledge Creation (3)
knowledge transferring	knowledge sharing	new knowledge creation
process of learning within individual's mind	social activities and practices as bases for learning	new knowledge objects and activities are collaborative created
constructivism based on	socio-constructivism based on	freedom of methods and support for creativity
process-based	progressive	creative
co-instructive	co-operative	co-constructive
reactive	active	proactive
Element of Processing Nature	Element of Knowledge Sharing Community	Element of Knowledge and Innovation Community

Figure 1. A significant crystallization of Laurea's pedagogical thinking was provided by the investigative and exploratory learning models, this refers to learning as seen from three perspectives. This is then applied to the culture of "transformation in learning" or Learning by Developing (LbD).

The three metaphors of learning applied in this implementation are; learning as knowledge acquisition (the acquisition metaphor); as participation in a social community (the participation metaphor) and "learning and intelligent activity in

general", in brief; knowledge creation (the knowledge creation metaphor). The focus is on investigating mediated processes of knowledge creation that have become especially important in the knowledge society. The implementation of the three perspectives of learning is further clarified by (Pirinen 2008d).

Value Network

Finland is at the forefront of innovative culture and performance. It is ranked third out of the 27 EU member states, and third out of 37 countries (including the EU countries, Croatia, Turkey, Iceland, Norway, Switzerland, Japan, the US, Australia, Canada and Israel) after Switzerland and Sweden in the EIS 2007. The main reason for this is its high level of education, and strong cooperation and networking between the public, academic and research sectors. Helsinki is the capital of a technologically advanced country which is especially advanced in information and communication technology. The Helsinki metropolitan region, consisting of Helsinki, Espoo and Vantaa, has 1.24 million inhabitants and is developing into a "hub city". At the core of the Finnish innovation system are education, research and the development of services, products, and knowledge intensive business and industry. Varied international cooperation is a feature that runs through the system. The Finnish national innovation system is an extensive trust based entity comprising the producers and users of new information, knowledge and know-how, and the various ways, in which they interact. The system is illustrated by the value network model in Figure 2.

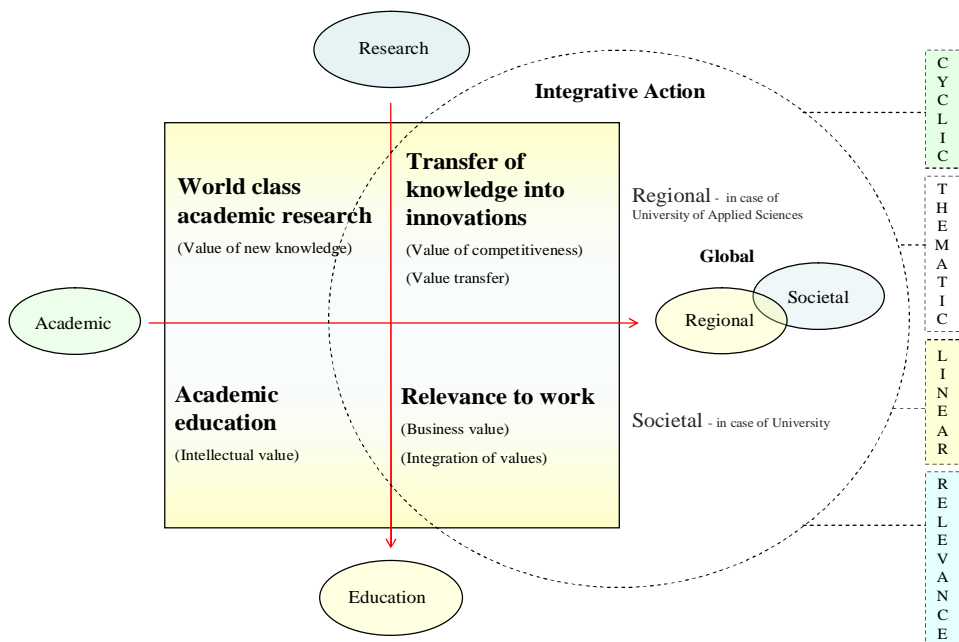


Figure 2. The value network and its interface elements (Pirinen 2008a). Universities of applied sciences have an active role in the innovation ecosystem of the region, dashed as a circle in the figure. Creativity is applied in the learning concept's flow, spirit and transformation of knowledge.

In the value network the producers of new knowledge include universities of applied sciences, universities, research institutes and business enterprises, Pirinen (2008c). The users are mostly enterprises, private citizens, decision makers and authorities responsible for societal and economic development. A key task for science, technology and innovation policies is to ensure a balanced development of the innovation system and the strengthening of cooperation within it; this cooperation model is called the trust based triple helix by Laurea University of Applied Sciences. It focuses on the transfer of knowledge to innovations and relevance to work. In the Finnish dual model science universities operate more on the right hand side of the figure.

The value network includes: transformations; lead innovations; supporting creativity in learning; valuable learning; individual and community learning; building know-how through partnerships in action; being based on authenticity; an experimental nature; trust; and conducting research through international cooperation. The red arrows describe the transferring of value in the value network: from

academic values to integration and business value as well as from knowledge to innovations. Action bridges knowledge and competence as well as value motivating actors to action in the value network (Pirinen 2008d).

Finnish Innovation System

The foremost organizations responsible for science and technology policies in Finland are the Ministry of Education and the Ministry of Trade and Industry. The Ministry of Education handles matters relating to education and training, science policy, universities and universities of applied sciences, and the Academy of Finland. The triple helix model studies the social conditions of knowledge production. The triple helix emphasizes the innovations produced through the dynamics of interactions and communications in academia, industry and government, as well as the social mechanisms of selection, variation and retention responsible for their evolution as sectors. In Laurea's case, different versions of the triple helix model have been discussed in terms of their structure and their ability to promote or obstruct innovations in themselves or as a product of their coordination. Laurea represents the development part of the triple helix in the Helsinki metropolitan region, and it is therefore positioned to serve the future needs of regional and global development.

In Finland, the foremost trends are the integration of technological and social innovation; an increase in interdisciplinary and cross-technological activities; and the emergence of the service sector (sector-knowledge-intensive and services) alongside the manufacturing sector as a key factor for the welfare of society, the economy and Finland's citizens. Figure 3 illustrates the Finnish innovation system and applied Triple Helix Model (Etzkowitz and Leydesdorff 1998).

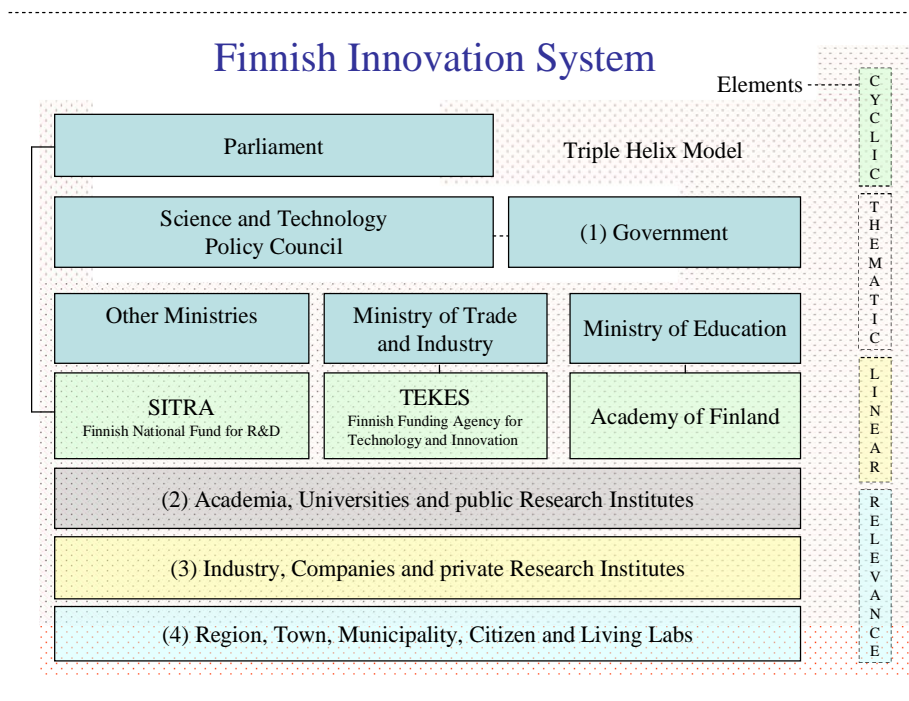


Figure 3. Universities of applied sciences have a function in the Finnish innovation system; they educate future and current experts for the labor market and participate in the research and development activities of regional industries in lead innovation cases.

The challenges in developing the Finnish innovation system relate to the prioritization of activities, the profiling of international and national research organizations, and the development of proactive and selective, foresight-based decision-making. The justification for an increase in funding is that funds should be channeled to issues of primary relevance to the economy and other areas of societal development and citizens' welfare. The strategic centers of excellence in science, technology and innovation represent a kind of organized cooperation between businesses, universities, research institutes and financing organizations, in which the parties commit to anticipating the needs of society and business in time spans of five to ten years. The development challenges are: quality of research; scientific and practical relevance; alleviation of fragmentation in research; the *internationalization of science*, technology and innovation; and obstacles to and incentives for entrepreneurship. The development of integrative

action models and procedures highlights the importance of horizontal cooperation at all levels of the innovation system (Pirinen 2008a).

Learning environments

The learning environment is built as a research and development project. It can be examined from the points of view of knowledge, skills, values and experiences. As a knowledge environment, it includes the knowledge and information related to each development project. As a skill environment, it contains the requirement of facilitating the necessary capabilities for carrying out a project. As a value environment, it comprises values agreed and identified jointly by the community, which direct and justify choices and actions. As an experiential environment, it focuses on individuals' experiences, the meanings awarded to these and the sharing of experiences between project participants. An experiential environment also includes tacit knowledge, which is shared either verbally or through actions in order to promote the learning process of the individual and the participating organization.

The learning environment is also a physical, psychological and virtual meeting place. The physical learning environment consists of various teaching spaces, workshops and laboratories. The environments offered by various employer oriented job placements arranged to foster competence in practice can also be seen as workshops. Workshops transmit culture related knowledge and skills. They provide tools in the form of the concepts and skills needed for the progress of the development projects and the students' competence. Labs all have special significance related to their specific purposes. As a psychological meeting space, the learning environment allows different experts to meet as partners and find new possibilities in their differences, as well as developing and refining their own and their partner's competence, and sharing competence in order to develop the operating environment. The virtual learning environment utilizes technology and allows for participation that transcends the limitations of time and place. The virtual environment facilitates meetings carried out over distance, at times that best suit the participants. The concept of online learning is located in the virtual environment where people meet in relation to guidance, counseling and the challenges contained in various learning exercises. The Onion model, developed by Fränti and Pirinen (2005), of the learning environments is illustrated in Figure 4, and the extension to Thematic Living Labs was added in 2008. The Onion model is challenging to implement because it implies a para-

digim shift in education from traditional methods to ones based on knowledge creation through research, development and learning (Pirinen 2008d).

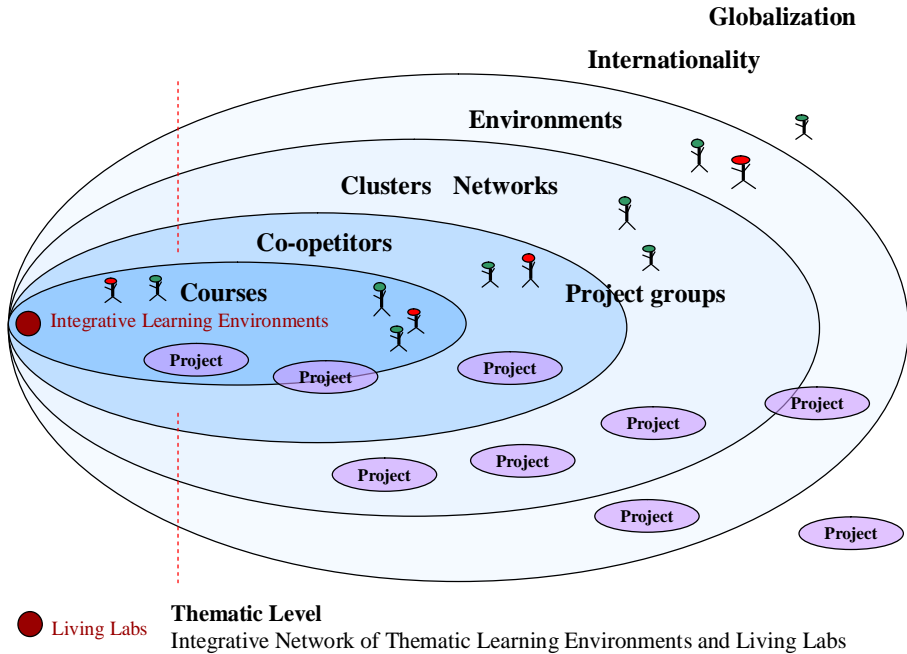


Figure 4. The Onion model extends traditional and instructional learning to a culture of Learning by Developing. It is a construction of the paradigm shift from reactive education methods to a culture of proactive knowledge creation through research. Integrative action links Living Labs and institutional integrative learning environments on a thematic level.

Internationality in the Onion model is implemented by International Expertise Services (IES). This is a practical and innovative way for integrating its task and strategy as it uses international partnerships to bring in expertise from higher education institutions and similar labour market clusters from around the world. In brief, IES means doing regional development through international trainee researchers.

To facilitate professional knowledge creation and rich interaction Laurea has several development environments, laboratories and test beds. International Expertise Services has been implemented at Laurea SID Labs, the international research and development environment of Laurea Leppävaara. The labs focus on Service Innovation Design and Development. They are staffed by talented people from all over the world who conduct research and development projects on work life. During the last two and a half years, about 28 trainee researchers from 12 different countries have done their internship placement there. The time they spend at Laurea SID Labs is an average of 5 months. Research and development activities are constantly increasing and the labs are now aiming to have around 20 international trainees for the 2009 spring semester. A shift in the amount and size of projects can also be observed; more R&D input is being contributed to internationally and nationally funded projects.

Learning by Developing (LbD)

The benefits of a proactive learning culture are being recognized as is the spirit of doing things collectively. In today's information society a decisive factor will be competence, including the skills and the know-how of individuals, and their motivation to utilize public and private services. The three perspectives of learning and the theoretical basis of networked expertise articulated by Hakkarainen, Paolonen, Paavola and Lehtinen (2004) are central to Learning by Developing. Learning by Developing is a pedagogical and communal approach in which learning is linked to applied research and development projects and culture. This means learning expertise that arises from social interaction, knowledge and competence sharing, the researching and problem solving of collective objectives. The model emphasizes cooperation and creating a "learning and developing" culture and makes it possible to include and use various scientific perspectives and methods of learning, i.e. researching and developing via operation and action.

The LbD model represents a management and work philosophy and culture based on the production of shared competence and creativity (Fränti and Pirinen 2005). In the current, developing, culture there are genuine research and development tasks, but there are no ready made solutions. The learning process starts by identifying the initial scope or strategic research object, analyzing and describing it, and selecting appropriate work methods. The model is not applicable for solving problems set in advance by someone else. Neither does it support the commissioned project principle, because the creative starting points are

determined by the cooperating participants of the value network, often together with professional developers from research and development organizations. The creative objectivity of the work is usually not possible to clearly define in advance, but is specified throughout the development process. The process requires critical thought strategies and skills for justifying solutions and evaluating evidence. Work consists of a continuous development process that focuses on research, development and the generation of new competences. The dimensional model of Learning by Developing is illustrated in Figure 5.

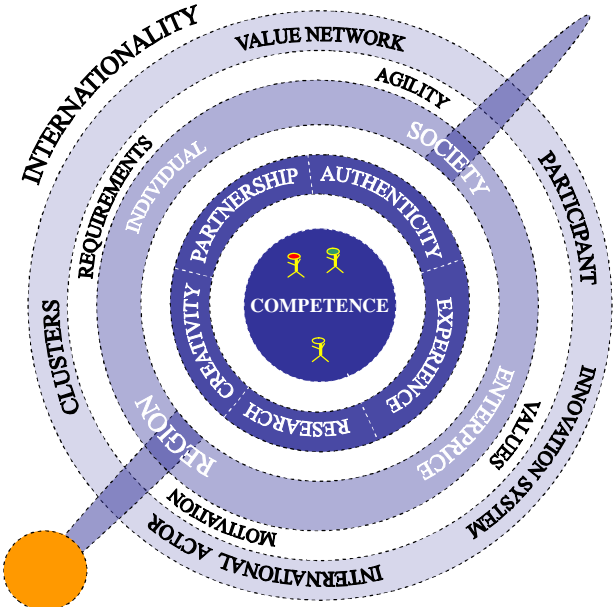


Figure 5. The integrative dimensions of LbD and its three perspectives of learning: knowledge acquisition, participation and knowledge creation (competence in this figure). The derivative dimensions of learning are the individual's learning, the community's learning and the building of new knowledge and capabilities. The impacts of LbD are support for; creativity, partnership in action, a basis in authenticity, an experimental nature and research with international cooperation. The "dimension model" supports the construction of creativity and innovations in which learning does not follow any fixed process model, but the supportive construction of courses brings out the dimensions in complementary ways.

Four elements of action

In integrative action four elements are specified by (Pirinen 2008a): 1) cyclic - to support creativity and innovations; 2) thematic - for the co-creation of pioneering innovations, scopes and structures of bodies of knowledge; 3) linear - for the implementation of research, development and action processes; and 4) relevance – for validity and scientific rigorousness as well as the quality of execution and production.

Integrative action

The integrative action process (Pirinen 2008b) is “a logic model of action” and is used in the best practices of exploratory, creative learning and LbD culture. In this study the objective is to implement and integrate the three statutory tasks in the context of services, service design, security and ICT while allowing creativity and innovativeness in the thematic network: This means coaching activities with the participants (students, teachers, co-operators and manager) in co-operation with the innovation system. The aim and meaning of the integrative action and process model is the creation of a linear development framework for cyclical innovation activities that possess a quality perspective. The model itself is a liberation process for innovative activities, rather than a process for automatic innovation generation. According to Engeström (2001) the innovative learning cycles do not follow any fixed order and the freedom of methods and creativity are emphasized in the innovation orientation. Hence, the nature of the integrative process is supportive rather than managerial in its cyclic and thematic elements, and objective in the linear and relevance elements (Pirinen 2008d). The nature of the integrative action process is that it is a clearly proactive, active and reactive philosophy that is based on shared learning processes in the value networks of the innovation system. In addition, learning is based on services, innovations, design and development (SID²). Figure 6 illustrates the integrative action model.

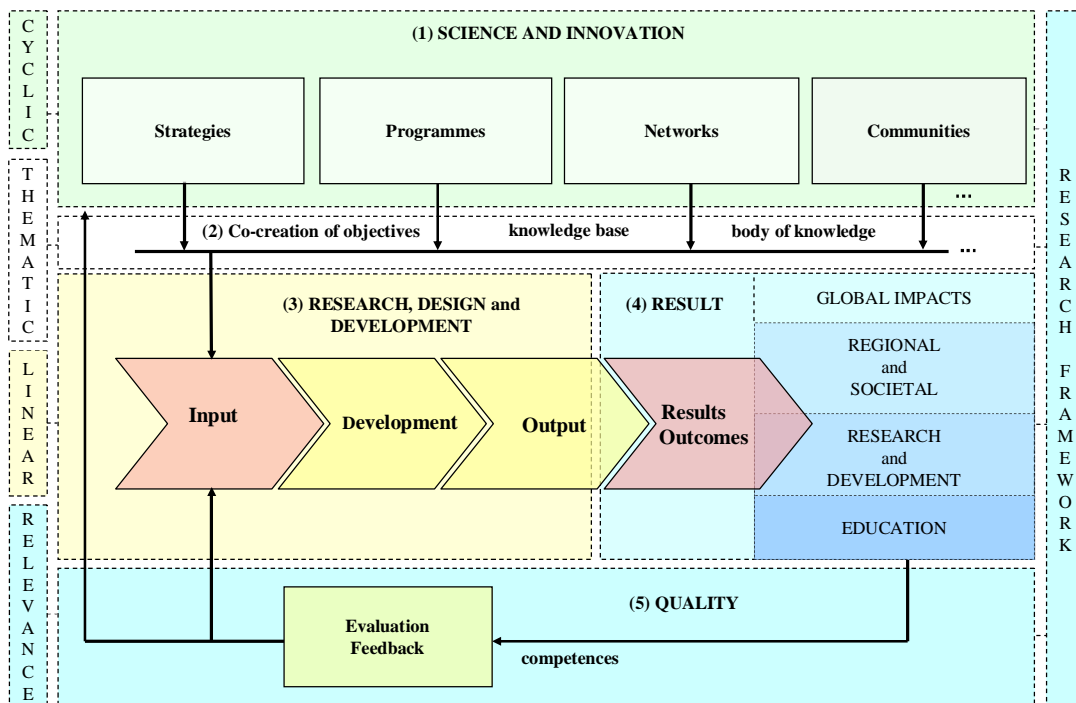


Figure 6. The Integrative action model (process) is an application used in the best practices of LbD (in the cultural dimensions). The objective was to implement and integrate the three statutory tasks in the context of services, service design, security and ICT at Laurea University of Applied Sciences. The main contribution of the integrative action and process model was the creation of a linear development framework for cyclical innovation activities with a quality perspective. The elements were used as full duplex and co-creative interfaces.

The dual imperatives of integrative action

FIRST IMPERATIVE: in general, if the innovation center-based objectives and lead innovations are used in education the learning action creates deeper and more relevant knowledge and competence for expertise communities than a workplace's or student's own themes or areas of interest (Kotila and Auvinen

2008). This is reasonable because the innovation topics and research areas of innovation centers are verifiable and analyzed from a future perspective. Furthermore this does not include any contradictions with creativity as it is possible to keep the creative scopes and themes of the innovation center flexible, motivating and creative enough for students in the integrative action process.

SECOND IMPERATIVE: the examples of new security and ICT cases are SATERISK (risks of satellites) and FLOODWARE (flood readiness and research of flood systems). Both are large, global R&D projects. The integrative action model was implemented to enable knowledge creation and the globalization of transformation. The idea, foundation, focus, themes, topics and spirit of SATERISK were elaborated by students. Thus, SATERISK is purely a student innovation and creation. This means that student driven creations also lead to the first imperative and that innovation centre based objectives may also be the co-creative creations of students. Hakkarainen et al. (2004) produced advanced judgments and basic to second imperative judgements from the perspective of creativity in learning. This focuses students own creations and the use of scaffolding structures for learning. Our solution is articulated and clarified in Figure 1, which illustrates the conclusion that *co-instructive, co-operative and co-constructive creativity* is supported in a Learning by Developing culture.

INTEGRATIVE THEMES OF CREATIVITY: It is possible to support creativity and innovation in learning but not to force them. The reasoning behind that is that creativity in learning starts when forcing in learning ends. Additionally, the principle that activities, action and results are evaluated but are not formalized in advance makes it possible that creativity and innovation in cyclic and thematic areas are supported in a way that makes it likely that they will occur and continue to exist thereafter.

Students

In Laurea's work-oriented research and development projects, the concept of partnership implies cooperation between lecturers, experts from the labour market and students. The cooperation is based on responsible commitment to the project. All participants are seen as "learners", because the development projects aim to produce change and generate new things. Partnership also means mutual respect and appreciation for diverse skills. The progress of a development project depends on sharing competence and building new competence out of different areas of expertise. Students participate as partners who increase their competence by learning how to use new tools and by taking part in various

research and development initiatives. Competence is founded on research based knowledge, understanding the professional context, handling the necessary tasks and managing various workplace situations to the extent that these skills are needed for each student's degree. Students create and set targets for their own study plans, identifying the competence needed for participation in a development project and the competence that can be obtained by participating in the project. In the development projects, students learn as individuals while also participating in shared learning and in producing new competence and know-how.

Lecturers

Laurea lecturers are researchers and developers, influential players in regional development and teachers. In our operating environment, carrying out an influential development project requires various kinds of competences, the ability to share and refine competence, and different roles of responsibility. The basis in development projects changes the concept of lectureship to imply partnership in a team of experts. Development projects consist of shared action. Some lecturers work as researchers, publishing reports that demonstrate the effectiveness of development projects as reformers and developers of competence in the labour market. Others act as developers, responsible for identifying and refining the processes of development projects. The third role of lecturers is in workshops, which transmit and share cultural knowledge and skills, and provide students with tools. Lectureship also involves partnerships with the labour market. The industry experts participating in development projects contribute the knowledge contained in workplace competence, while lecturers ensure that evidence based data are available for explaining this competence. They join forces to produce new know-how for developing and reforming the labour market. The role of lecturers in development projects can also be described as that of an expert, a participant and a pedagogical leader, who facilitates the students' growth and development into experts in their fields. Figure 7 illustrates collaborative action in a distributed expertise and learning culture.

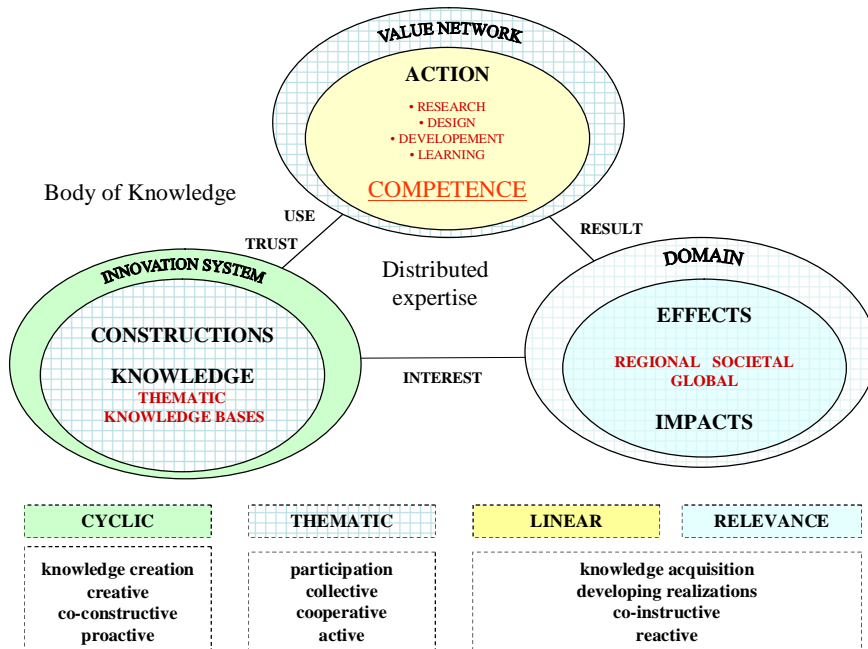


Figure 7. The thematic nature comes from collaborative action in combining knowledge from several sources, such as lead innovation systems, or institutions such as strategic centers of excellence in science, technology and innovation in ICT. Cooperation ensures a body of knowledge is co-created with other organizations to contribute to innovations in industry and society as whole e.g. national strategic research agendas (SRA).

Information System Framework and Integrative Action

The Information System Framework was proposed by Hevner, March, Park and Ram (2004). It presents a conceptual framework for understanding, executing, and evaluating information systems research that combines behavioral science and design science paradigms. The framework has been developed to position and compare these paradigms. In an integrative application the System Framework Model includes thematic, linear and relevance elements and so the actions are extended to be better able to support cyclic creativity and innovations. According to Fränti and Pirinen (2005) the Onion model extends traditional and instructional learning into a culture of LbD. It results from the paradigm shift from

reactive education methods to a culture of proactive knowledge creation through co-creative and co-instructive research and development. Integrative action links Living Labs and institutional integrative learning environments on a thematic level. It integrates citizens and their needs for care, education, social entity, creativity and value in a participatory way. This can be understood as being motivated by the knowledge of the participants, which allows them to focus on the service and uses their self motivation and freedom to achieve creativity and produce innovative products and services. These perspectives are based on the “necessity of producing one’s own creations” in inquiry based learning by Hakkarainen et al. (2004) and the three metaphors of learning (Paavola et al. 2004). Using integrative action underlines the fact that the extension of integrative action does not change the Information System Framework Model. Instead, a creativity element is the influencing factor there. These “cyclic influences” are shown with dashes around them in Figure 8 to represent co-creation and their support of creativity and innovation inside the Information System Framework. In the environment it is applied within, the Information System Framework operates within integrative action parameters by using thematic, linear and relevance elements. Furthermore, integrative action normally links value networks and motivation based creativity to linear development. It also connects a local environment, a trust based value network and innovations that are random and cyclic. An “early innovation issue, a hidden innovation or method” may exist without a problem and so it is necessary that creativity and co-creation is supported by the whole innovation system (Pirinen 2008c). Figure 8 illustrates the applied Information System Framework (Hevner et al. 2004).

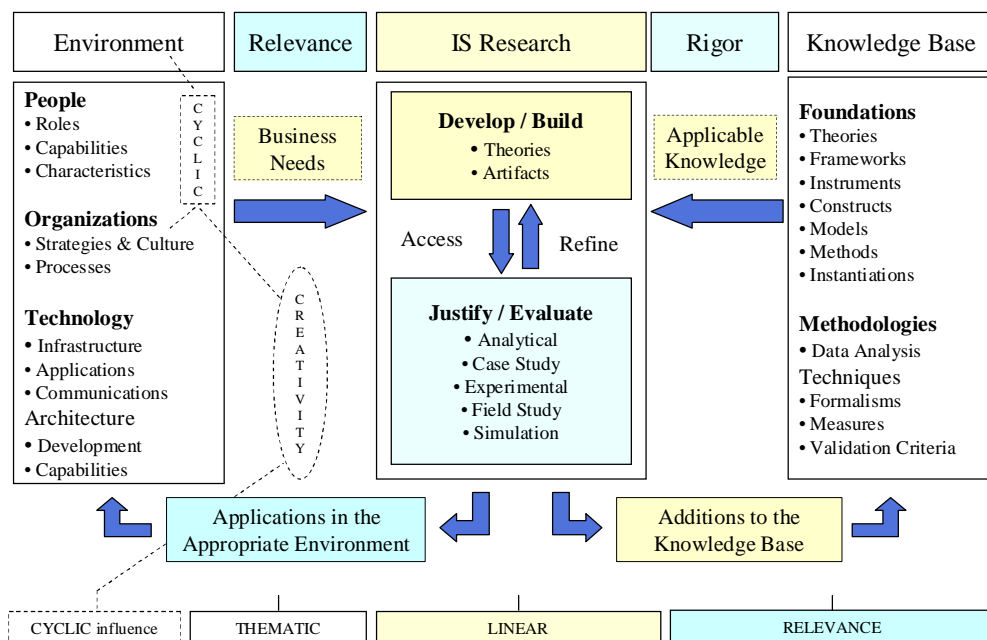


Figure 8. presents a conceptual framework for understanding, executing, and evaluating information systems research combining behavioral-science and design-science paradigms. The framework is used to position and compare these paradigms.

Implementing Research in Integrative Action

The integrative action model is used as part of a larger innovation system value network, and a single intervention must be part of a larger network of transactions and international transformations. The scalability of a rigorous research system is a prerequisite for the sustainability and quality of action. The nature of action in the target organization is cyclical e.g. a work year starts and ends in the co-creation of planning, where teachers and management co-create different kinds of action planning every year. Important management planning generally takes place over one to three days and occurs two to four times per year off campus. The evaluation results are documented and collected, and conclusions

are presented during these planning days. Almost all instances of strategy (strategies, agreements and objectives) are managed using bottom-up and student centered principles. Strategies are balanced and complementarily adjusted with other actors in a region, helping them learn to work and act together. The aim is to foster better regional development “third task” and cluster based thinking in the innovation system’s value network from the perspective of service development and innovation. The nature of action inside the integrative action process is a clearly proactive, active and reactive philosophy that is based on shared learning processes in the value networks of the innovation system. In addition, learning is based on services, innovations, design and development (SID²). In this integrative environment, a design is a set of activities, products, services and social practices.

Action research is sustainable and embedded into the integrative action and learning culture (LbD) for producing knowledge in order to guide the practice of the modification of action (Baskerville and Myers 2004). Case studies are made to gain a detailed understanding of innovations (Yin 2009). Design research produces viable artifacts, innovations and services. Design science produces design science knowledge for improving the activities of design and construction, in other words, it produces the knowledge to implement an innovation (Järvinen 2004, Järvinen 2007 and van Aken 2004). A proactive approach is used for influencing the future (Vapaavuori and Von Bruun 2003). A service design is an activity aimed at materializing the non-material dimensions of services (Mager 2004). Validity, relevance and the rigorousness of research work are implemented in the linear and relevance elements of the integrative action process. Furthermore, our natural research scope also synergizes the behavioral, psychological, educational and sociological sciences (Hakkarainen et al. 2004). The ecosystem of information systems research is described in Figure 9.

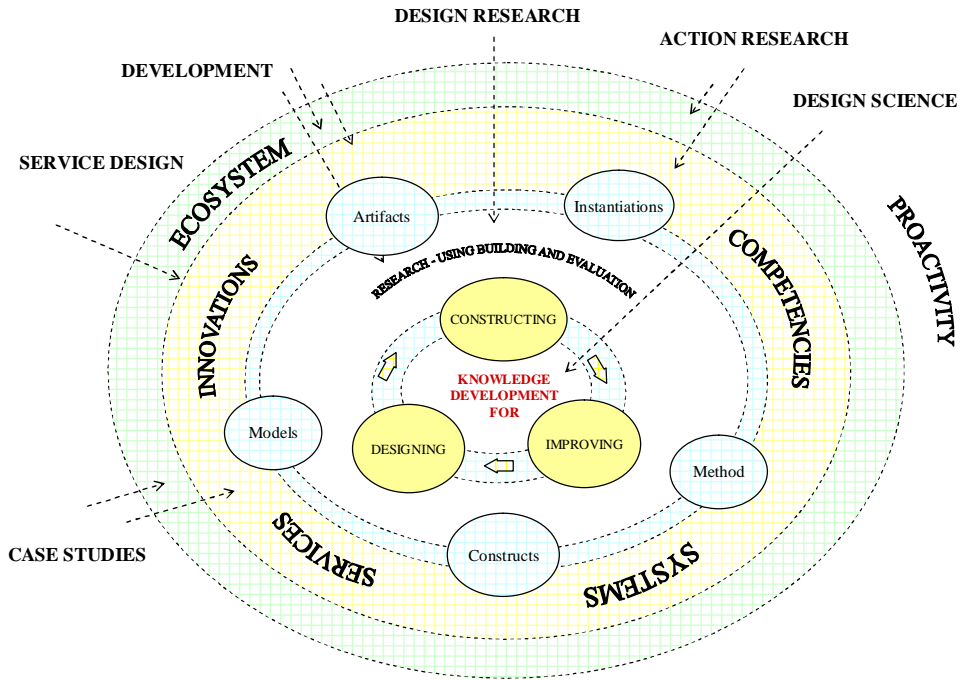


Figure 9. Design research must produce a viable artifact in the form of a construct, model, method, or instantiation (Hevner et al. 2004). A realistic implementation contributes to the identification of potential problems in a theorized design and in demonstrating that the design is worth considering. The question that remains is whether an instantiation can be a component of a theory. Instantiated artifacts are things in the physical world, while a theory is an abstract expression of ideas about the phenomena in the physical world (Gregor and Jones 2007). The dashed line arrows points to an area of influence, of activity, or research in the figure.

Conclusion

The result of these efforts is the Learning by Developing (LbD) operating model, which combines and integrates the learning process and work oriented development. Development initiatives are built on the principle of partnership, which means that students, lecturers and experts from the world of work cooperate in project environments. Learning takes place as projects progress. As the projects

are based on research and development carried out for the labour market, the learning includes competences required for students to achieve their degrees. The contribution and focus of learning environments is action related to the three tasks, which builds bridges between technologies and applications so that research results can be turned into competence and economic success. Innovation alliances should also be made between various stakeholders, particularly in science, business and politics. In the learning environment and living labs vertical cooperation, namely lead innovations, is geared toward certain services, applications and branches with specifically coordinated support contributions from technological areas. In integrative cooperation, “technological alliances” pursuing technological objectives are jointly created with science and business through shared service platforms. This interaction may lead to innovative research, new models for the innovation process, new applications of knowledge acquisition, participation and knowledge creation (meaning the implementation of the three metaphors of learning in innovation value networks); a new role in the innovation ecosystem, and an improvement of the spirit and flow of the innovative climate in higher education institutions.

Laurea was appointed as a centre of excellence for regional development for 2003-2004 and 2006-2007, and as a centre of excellence in education for 2005-2006 and 2008-2009. The Finnish Higher Education Evaluation Council considered Laurea’s pedagogical learning model, Learning by Developing (LbD), to be representative of a high quality innovation effort. All quality criteria set by the council were met and some were termed excellent. This approach to learning is developing new, effective ways of learning in connection with research and development activity. In addition, LbD serves the networking needs of our society and region.

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19 Advanced Education of Technical Talents for Corporate Practice

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Abstract

This article entitled Advanced Education of Technical Talents for Corporate Practice is concerned with the practical aspect of implementing the National Research II project called 2E-2-1 - Research leading to better conditions for "industries-university" or "industries-university-research institutions" research consortia.

This cooperation is based on a web communication portal as a platform for implementing relationships between students and the business sphere and their communication. This web portal will serve as a meeting place for students of technical universities, teachers and industrial enterprises.

At a general level, this cooperation will help directly link the study and the teaching methods used with the real-life requirements. At present, the higher-education system is seen more as a theoretical one with little focus on such requirements. This results in squandering the financial and human resources. When entering employment, a graduate has to be first trained or re-trained to become a full-fledged employee. However, this process should already take place at technical universities with graduates being fully prepared for practical jobs without the necessity of further training.

Also methods and means are missing necessary to link the system of education and the real-life requirements. The portal focused on promising technical talents and the requirements of companies will make an attempt to match the supply

and demand of the future graduates with the supply and demand of the companies. Incorporating the requirements of the companies directly in the teaching methods will improve the quality of teaching to educate full-fledged experts already at the university.

If the students themselves find this portal meaningful discovering the opportunities it offers, it will become a significant motivating factor for their eagerness for further education. This portal will also offer them a list of on-the-job trainings to choose from with companies also profiting from such a potential.

About the project

The project is presented as part of the National Research Project II of the Ministry of Education, Youth, and Sports in the 2E-2-1 category specified as research leading to the creation of conditions better for the existence of „industry – university“ or „industry – university – research institute“ research consortia for work on particular projects.

The project aims to achieve efficient barrier-free communication and involve university students in solving technical issues early in their second year. This should stimulate their interest in their specialty and future professional development creating a group of talented students actively involved and interested in their future work in the industrial sphere.

Thus, this project intends to prepare a system of long-term cooperation between technical universities and the industries. As a significant part, it foresees creating multi-tier relationships enabling the students to cooperate with companies from the very beginning of their studies. There are already singular projects in place between universities and companies. The importance of this project lies in creating and testing a consortium model including the current and future forms of cooperation.

The project deals with the shortcomings in the communication between both spheres aiming to offer an institutionally anchored form of cooperation that should be beneficent and attractive for both parties. It shows students of technical universities the opportunities offered by Czech companies. The outcomes of the project include search for and education of technically talented students to motivate them to work in their industry in this country.

Presentation of work on the project

The Czech Republic has always ranked among countries abounding with technically educated experts and skilful technicians. This ranking which has accounted for this country's goodwill since the times when it was part of the Austrian-Hungarian monarchy has been degraded alarmingly over the past decade. Insufficient attention devoted to technical secondary schools resulting in lower interest in study at technical colleges as compared, for example, with humanities, has caused the current lack of engineers with a great deal of them seeking jobs outside their study specialization. Of most alarming gravity is the exodus of the most talented graduates. Employing educated immigrants from the neighbouring countries or from Asia is certainly only the second best option.

The primary interest - common to the industries and the educational institutions - should be to recruit, educate, and keep technical talents for research and development as well as practical applications in the Czech Republic. This is a problem faced by both universities and companies. For this reason, these institutions sign cooperation agreements. There is an increasing number of links with a search for such forms of cooperation as would provide for an effective transfer of information and contacts (such agreements between the BUT Faculty of Information Technology and Microsoft). There are singular projects to make more attractive the choice of jobs offered to new graduates (such as job fairs). Thus we see successful projects (focusing on specialised tasks) or the implementation of well-tested forms of cooperation such as Technological Incubator.

There are, however, many more ways of cooperation as well as open questions addressed by this project. In the past, contracts between the industries and universities were focused on the technical aspects of a solution. This project, however, stresses communication as the basic prerequisite for successful work on a set task.

Using the results of a preliminary enquiry among the managers of leading high-tech companies, the following four problem areas can be identified:

1. Although the cooperation agreements between universities and companies have already been outlined, new communication barriers are appearing. No medium has been created to be used by sections, departments, or institutes for direct communication - barrier-free communication.

2. Teachers at universities are not motivated to enter into or even seek co-operation with the business sphere. They only need cooperation on an individual basis without any motivation programme.
3. University departments are not flexible enough to accept and work on a particular task. This may be attributed to insufficient communication.
4. Links and relationships are created by people rather than by businesses. This means that cooperation is only valuable if both parties are willing to spend time and energy on a joint enterprise working towards mutual understanding of each other's environment, tasks, aims, and objectives.

The underlying principle of dealing with such issues consists in collecting data, making enquiries among students of technical universities and, subsequently, analysing and evaluating the results. Based on the resulting information, shortcomings determined in this way as well as the best practices, a system has been designed to support the search for talents and motivation of young engineers containing a system of references, a motivation system for teachers, joint projects between the university and businesses and, most importantly, a barrier-free means of communication - a web portal that can be used for implementing designs.

The paper will further deal with such a web portal and the aspects related to its development, management, and operation.

Target groups

There are three target groups entering the system on which the project is focused. These include the university, the student, and the company. Although all the above entities want to achieve a common objective, that is, prosperity and jobs corresponding to university education, they demand different things of the system. However, from the long-term viewpoint, communication barriers have been created with any reasonable and joint cooperation concept being absent.

In the current practice, every of the above entities has to overcome several communication tiers to get access to information and opportunity to work on a particular problem. Apart from a considerable time delay also a great deal of red tape is created.

University

Brno University of Technology is a university which is extremely suitable for this type of project. Among its parts are faculties of chemistry, mechanical engineering, information technology, business and management, and electrical engineering.

It is possible to be informed on the views of the students and teachers of these faculties. These faculties are also situated in the closest vicinity of the Brno Technology Park.

The university is represented mostly by its teachers and research experts. During their studies, students are being equipped by a theoretical background that should help them in their transition to practical life. The teachers only embark on a closer cooperation with the business sphere when dealing with partial tasks or during joint projects. They get to solving practical tasks when supervising Bachelor's and Master's degree projects or when entering a contract for work on particular partial tasks.

The university has a huge potential of a number leading research teams, with sufficiently enough qualified experts and a great deal of well-equipped lecture rooms. However, the capacities of these human and technical resources are not used to the full extent.

Student

A student may be characterised as someone who is keen on being educated at a university to acquire more profound knowledge in a chosen field and to having a better chance to find the desired job.

BUT graduates are rather successful in finding well-paid jobs in their fields of study. Quite often, however, their employers reproach them for not being able to link in the practical side of their jobs with the theoretical background thus requiring retraining courses very soon. Other reproaches are then related to their insufficient communication skills (both in their native and foreign language) and to promoting their own interests regardless of circumstances - thus degrading their ability to work in a team. Through cooperation with companies, students may learn how to respond to practical requirements and, in overcoming such shortcomings, they will increase their price in the labour market.

Company

The company is the most important element of the system that can have a positive influence on its potential employees shaping them to meet the specific requirements of the profession. It also brings positive impulses to the university segment informing teachers and research workers of the real needs of the technical business sphere. In return, the university may offer the company opportunities for further education of its employees as well as meetings with qualified experts. The resulting synergy is then a contribution to all the parties involved.

Web portal

A web portal has been chosen as the means for achieving all the above objectives since it is a barrier-free means of communication. At present, the portal is at the development stage ready for a cut-over.

The portal will enable direct company-student, company-teacher (university), and teacher (university) -student communication.

A means of communication will make it possible for all these groups to cooperate simply and quickly.

We would like to offer a system enabling a direct contact with the support of the managements of both the faculties and the companies. It may be expected that the students interested in technical issues of companies are active, resourceful and hardworking with some motivation and, as such, may be viewed as talents. Such talented students deserve to be promoted by positive references by the university. References are a system element used quite often all over the world. They have not yet been given a full credit in the Czech Republic. Developing a system of references within the consortium means paving the way to educating technical talents.

There is obviously a chance of forming a group of portal users who remain in contact even after graduation. This is going to be a reservoir of young employees - talents for the companies. The model should, in the first place, be tested at companies that are in need of highly educated engineers.

With some of these companies, we discussed issues of confidentiality and mutual competition within the consortium. The managements of the companies confirmed that they could control their protected data even in such an open system.

This means that, by admitting a common means of communication, they run no risk of this being misused their competitors.

In the last part of this paper we will be discussing particular opportunities offered by this portal to each segment and implemented within the system.

Student versus company

The themes of Bachelor's and Master's degree and doctoral projects can be posted in the system making it possible for companies to find students suitable for work on particular tasks and, depending on their conduct and the quality of the solutions they provide, also potential employees.

Next the companies may find suitable candidates for on-the-job training, part-time jobs, trainee programmes and grant talented students of engineering various awards and scholarships. This support aims to find the best talented students offering them long-term cooperation.

The company will be rewarded by new information and innovations that the new full-time or part-time employees bring with themselves to the company.

The students will benefit from this by being able to practice and get the required experience even before graduation testing the theoretical knowledge acquired at the university. Important is also that they can access information not available at the university.

Student versus university

Since the university expects its graduates to create its goodwill and improve its image in their practical jobs, it is very much interested in educating top experts with excellent knowledge and skills. In the educational process, the university can also encourage young talented students by offering them positions of research assistants at departments using the students' knowledge and skills to fulfil partial tasks and motivating them by offering them scholarships, study stays abroad etc.

Students can use this portal to get access to a knowledge database, put specialized questions to teachers, and get their hands on interdisciplinary study materials. The possibility of interdisciplinary studies plays an important role in this system. Even if Brno University of Technology is an umbrella institution of many specialised departments, there is hardly any cooperation going on or only one in the form of participation in singular projects. The knowledge database uses an

information marketplace from various fields of engineering and its sharing is a step forward in this respect.

Students are interested in further education not only in their own field but also in their leisure. In this way, university can offer them study stays abroad, seminars, training courses, and competitions. In cooperation with the companies, setting up a career centre seems to be useful, which rarely occurs in this country and it is only big companies that bring revolutionary ideas to the marketplace.

Company versus university

Companies should enter the system offering practical experience of experts, which is often different from that of an academic theoretician or a research worker at a university. Such an expert may be employed by the university as a lecturer or a consultant.

Companies can exert a positive influence on its future employees by formulating the requirements to be met by the future graduates with the university responding to such requirements by changing the teaching methods or suitably enhancing the curricula.

Experts with practical experience are welcomed on state examination boards since they can precisely measure the quality of the submitted projects and the candidates' ability to defend such projects.

The presence of companies on the portal will be used by the university for empirical research and the companies will be encouraged to offer excursions to students to get acquainted with the specific environments of the companies.

In return, the university can offer the companies attendance at its training, seminars, and specialized lectures. A successful series of specialized lectures on topical subjects for a wider public has already been started at one of the faculties involved arousing tremendous interest. Also in the long run, the university can offer retraining courses for employees of companies for which it has an excellent professional and technological background. Last but not least, the companies are immensely interested in getting references for individual students. This is something that they are missing in their decision making process when recruiting new employees since insufficient information often results in erroneous decisions with the candidates chosen for the required positions being not the best ones. A system of positive references, not on a mass scale, but rather focussing on technically talented students, would make such a decision making process much more efficient.

Technical solution

Based on the project's main design, its practical part was directed towards creating an internet portal as a means of communication. For this purpose, funds were assigned to buying technologies to be used for the creation, administration and smooth operation of such a portal. A server solution and development tools were bought in the first place.

A basic web portal design was set up logically structured into segments defining the portal. Also the information contained on the portal was divided into general information available to the public, and parts only available the entities involved.

The public part is mostly intended for those companies, teachers, or students looking for information or cooperation. The main purpose in this case is to provide comprehensive information on the purpose and function of this portal, which forms only a fraction of the entire portal.

The main part can only be accessed after logging in to the system connected with authentication. Thanks to filtering the relevancy of the accessing entities in terms of their contribution to the whole is guaranteed.



Figure 2. Logo

The portal was named RING. It stands for: RING - Research, Innovation, News, and Governance. However, it can also be interpreted as: RING: Space for partnership and cooperation. Also a logo was created to represent this portal.

Currently we are negotiating with the Centre of Computer and Information Services, which operates the university information system to be able to integrate and access some data without having to duplicate them. During these negotiations we are trying to achieve maximum user-friendliness of the portal.

Based on the implemented and planned enquiries, areas were identified to be implemented as part of Ring. In implementing individual parts of the system, a modular system was chosen to provide for a comprehensive system.

The implementation team's main objective is to achieve a user-friendly interface for communication between entities. This objective governs a number of decisions related to the technical implementation. The need to assess the user-friendliness was the underlying idea for further enquiries to map the requirements of the entities involved in terms of technical implementation and sophisti-

cation or user-friendliness of the entire system. Above all, the current requirements include simplicity, safety and transparency by which the implementation work as yet carried out has been guided.

Degree projects and profiles were chosen as basic modules to provide for systematic ordering of users and specifications of their contacts for further cooperation and, subsequently, further extension to reference or career modules. The Degree projects module then provides space for matching the demand for and supply of (Bachelor's, Master's, and doctoral degree) project themes and can be thought of as a potential for extending the currently assigned themes to practical areas and solutions, which will also help the entities involved.

Other modules prepared for launching include a list of current events such as seminars, meetings, and discussions to provide up-to-date information and personal contacts. It is the strengthening of relationships between the entities that is necessary for the portal to be viable.

The screenshot displays the 'Ring' portal interface. At the top left is the 'ring' logo with the tagline 'research innovation news governance'. The main title is 'PROSTOR PRO PARTNERSTVÍ A SPOLUPRÁCI'. Below this are three main categories: 'STUDENT' (with a group photo), 'FIRMA' (with keyboard keys), and 'ŠKOLA' (with a building image). On the left is a vertical 'MENU' with links: 'O PROJEKTU', 'ZAMĚSTNÁNÍ', 'TECHNICKÁ ŘEŠENÍ', 'PRAXE', 'DIPLOMNÍ PRÁCE', and 'KONZULTACE'. On the right is a login/register section with tabs for 'Student/Škola' and 'Firma', input fields for 'Email*' and 'Heslo*', a 'Přihlásit se' button, and a 'Registrovat se' link. Below the login section is a 'vyhledávání' (search) box. At the bottom center is a large text box with a welcome message in Czech and the statement 'RING je místem, které spojuje teorii s praxí.' (RING is a place that connects theory with practice). On the far right is a vertical 'REFERENCES' section with a link 'odkazy na fakultu apod.' (links to the faculty, etc.).

Figure 3. Ring - Working version

Conclusion

This article entitled Winning and Educating Technical Talents at Brno University of Technology was concerned with a summary of the first stage of implementing the National Research II project called 2E-2-1 - Research leading to better conditions for "industries-university" or "industries-university-research institutions" research consortia.

As part of the implementation, extensive investigations were conducted among the entities involved to monitor their needs and expectations of the projects objectives.

Based on these investigations, modifications were carried out of the technical implementation of the project in the form of a web portal called RING.

This portal has been designed for three basic entities: – Student, University, and Company. As such, it is seen as a space for interaction. In terms of the technical implementation, attempts are made to create a state-of-the-art barrier-free communication space, which is well-structured and user-friendly.

All the entities involved welcomed the portal, which made it possible to tailor the portal to their needs and achieve easier communication. Representatives of target groups were met on several occasions to enhance the project's basic ideas and fine-tune its parts.

At present, the portal's backbone is technically implemented as well as parts of modules to be implemented in response to the requirements of the parties involved. Negotiations are also conducted to integrate some parts of the system with the university information system. Based on investigations, further modules are being modified to get as close to the users' requirements as possible and new modules created using the specifications based on the entities' requirements. In further steps, activities are supported related to project enquiries, strengthening of personal contact at joint events as well as to critical comments resulting from testing the already implemented parts of the system.

The project has now been shifted to its second part concerned with the technical implementation based on the objectives set. This includes, in the first place, fulfilling the expectations of the parties involved with respect to the system requirements specified. The results of an enquiry have shown that the portal has something to offer to all of the parties involved even if their degrees of motivation may be different.

Resources

University entities

Brno University of Technology

<http://www.vutbr.cz/?set_lang=1&lang=0>

Faculty of Chemistry

<<http://www.fch.vutbr.cz/en.html>>

Faculty of Electrical Engineering and Communication

<<http://www.feec.vutbr.cz/fakulta/home.php.en?lang=en>>

Faculty of Information Technology

<<http://www.fit.vutbr.cz/en>>

Faculty of Business and Management

<<http://www.fbm.vutbr.cz/fp.asp?jazyk=a>>

Faculty of Mechanical Engineering

<<http://www.fme.vutbr.cz/?lang=1>>

On the project

Czech Ministry of Education, Youth, and Sports – information on projects of national importance

<<http://www.msmt.cz/vyzkum/narodni-program-vyzkumu-npv-ii-programy-2b-2c-2d-2e?lred=1>>

Technical implementation

RING

<<http://www.ring.vutbr.cz>>

20 Winning hearts and minds: Implementing Activity Led Learning (ALL)

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Abstract

A faculty of Engineering and Computing (EC) in a UK university is investing in innovative approaches to both student support and pedagogy. The Faculty courses cover a diverse range of discipline areas, within the broad definition of the Engineering and Computing spectrum, with over 4000 students currently enrolled. Significant funding has been secured to develop prestigious new and enhanced building (learning) facilities, appropriately designed to accommodate the Faculty's full adoption of an Activity Led Learning (ALL) approach by September 2011. This paper reports on transitional arrangements within the Faculty in preparation for 2011, not least how to influence the culture and attitudes of Faculty members. There is a focus on two key interrelated aspects of the Faculty's strategic direction. Firstly a programme of pilot ALL study programmes in different EC subject areas is being rolled out, developed and monitored during the 2008-9 academic year and beyond, coordinated through an advisory group. Secondly, the Student Experience Enhancement Unit (SEE-U) has been established within the Faculty, employing students in the role of Student Advocate, to improve support and guidance available and to encourage improvements to student-facing processes and systems. This paper documents how this initiative is being influenced by innovative practice in Universities in other parts of the world as well as the continuous improvement change management approach being adopted enhanced through change agents working 'in' the system.

Key words: Activity Led Learning, Student Experience Enhancement, Community of Practice, Community of Learners, Student Advocacy

Introduction

Coventry University's faculty of Engineering and Computing (EC) in the UK is investing in innovative approaches to both student support and pedagogy. The faculty courses cover a diverse range of discipline areas, within the broad definition of the Engineering and Computing spectrum, with over 4000 students currently enrolled. Significant funding has been secured to develop a prestigious central faculty building, appropriately designed to accommodate the Faculty's full adoption of an Activity Led Learning (ALL) approach by September 2011. The activities during the interim three years will be crucial for determining the long term success for all members of the EC faculty learning community.

The current challenges facing the faculty require awareness of both the staff and student perspectives during the evolution from 'old' to 'new'. It is important to encourage all Faculty staff to contribute to the policy decisions affecting future plans because only those people with enthusiasm will be suitably prepared and equipped to embrace and exploit opportunities of the new approaches. However there is an equally important goal of ensuring that any new initiatives will genuinely benefit students. Overarching the programme of pedagogical developments is the continuing requirement to improve the provision and effectiveness of support mechanisms encompassing all aspects of the student experience, for both the current student population and for the future.

This paper reports about transitional arrangements within the faculty in preparation for 2011, not least how to engage staff and students with the change process to achieve sustainable change. There is a focus on two key interrelated aspects of the Faculty's strategic direction. Firstly details are set out describing the programme of pilot ALL study programmes in different EC subject areas being rolled out and monitored during the 2008-9 academic year, coordinated through the Faculty's Learning, Teaching and Assessment (LTA) advisory group. Secondly, the Student Experience Enhancement Unit (SEE-U) has been established within the faculty, employing students in the role of student advocate, to improve support and guidance available and to encourage improvements to student-facing processes and systems.

The paper documents how the faculty's future direction is being influenced by Universities in different parts of the world, including USA, Australia and Finland, where innovative approaches to pedagogy and student support have been suc-

cessfully adopted. In this way the faculty policy is being developed by applying the experience, and building on success, of other Universities as well as benefiting from its own experiences. This consultation process is also helping to inform key decisions about resources and infrastructure requirements for the new faculty building.

The authors' contributions emanate from two different but complementary perspectives. As faculty Teaching Development Fellow the first author's key interest is in working with Faculty staff to build a community of ALL practitioners who actively contribute to defining and developing the concepts and practicalities of ALL. The second author leads the faculty's SEE-U, and as such has an explicit focus on the student perspective of any changes affecting the faculty's learning and teaching provision. Both authors are focused on a continuous improvement approach to managing change involving consultation with, and involvement of, a wide range of people from the faculty's learning community including students, staff, and employer and professional body representatives.

Background to this initiative

As documented in Wilson-Medhurst et al, 2008 the Engineering and Computing (EC) faculty at Coventry wishes to maintain and develop its national and international reputation for high quality professionally focussed graduates and the learning experience that it provides. This through an innovative activity led learning culture, building on existing areas of good practice appropriately supported and aligned both to its building (learning) facilities and student facing systems and processes.

As indicated above, the faculty has a one-off opportunity, through a £60,000,000 project to create an environment planned and designed to support the delivery of this learning experience which will incorporate leading-edge learning and teaching practice. In summary the faculty's vision is to develop communities of learners through employer and profession focussed, activity led education. The key anticipated benefits of this approach include better engagement of students and staff in the learning experience, improved student retention and progression, increased graduate employment rates and greater staff and student satisfaction (see Wilson-Medhurst et al , 2008 for further details).

This vision acknowledges the explicit link between research and teaching. This with applied research (pedagogical) to inform teaching practice, and applied research (within discipline) to inform teaching, with parity between the two. Re-

searchers are also contributors to the teaching practice and part of the learning community.

To achieve the above the faculty requires an activity led learning culture and student focussed systems and processes that are fit for this purpose or vision. This paper focuses on exploring how the required culture shift is being achieved in these two key areas of the faculty's operation.

Activity Led Learning

As indicated above the learning and teaching (L&T) vision underpinning this initiative is to foster communities of learners engaged in employer and profession focussed activity led education. Currently there are pockets of Activity Led Learning (ALL) L&T activity within the faculty and the purpose of the faculty's L&T vision for an ALL pedagogy aligned to appropriate learning facilities is to have a more consistent ALL learning experience for all EC students. Fundamentally ALL involves students as active participants in the learning process with the tutor acting as facilitator rather than 'transmitter' of knowledge. This with the aim of promoting student retention, engagement and achievement, providing a more rewarding teaching experience for staff, and employers with the kind of graduates they would like to employ. Active learning experiences are more likely to have significant positive gains for the learner as the following quote from McCowan and Knapper, 2002, p. 633 attests:

"Learning in a passive system has a much greater tendency to be both superficial and quickly forgotten. Active involvement in learning helps the student to develop the skills of self-learning while at the same time contributing to a deeper, longer lasting knowledge of the theoretical material.....[and] ...it is almost the only effective way to develop professional skills and to realise the integration of material from different sources."

As early as 1949 educationalists were observing that "learning takes place through the active behaviour of the student: it is what [s/]he does that [s/]he learns, not what the teacher does" (Tyler, 1949)

Activity Led Learning is therefore intended to be a pedagogy for engagement and to promote transformational learning. An initial working definition of ALL was posed in Wilson-Medhurst et al, 2008 and is revised as below.

Activity Led Learning is a pedagogy in which the activity is the focal point of the learning experience and the tutor acts as a facilitator. An activity is a problem, project, scenario, case-study, research question or similar in a

classroom, work-based, laboratory-based or other educational setting and for which there are a range of possible solutions or responses. Activities may cross subject boundaries, as activities within professional practice often do.

Activity Led Learning requires a self-directed inquiry or research-like process in which the individual learner, or team of learners, seek and apply relevant knowledge, skilful practices, understanding and resources (personal and physical) relevant to the activity domain to achieve appropriate learning outcome(s) or intention(s). To be appropriate, the learning outcomes or intentions must be consistent with the aims, outcomes and intentions of the programme of study with which the student is engaged.

Levels of engagement with the ALL pedagogy will be reciprocally influenced by the attitudes, values and beliefs (understandings) of the staff and students involved. Initially staff must engage, but so too must students if the learning and teaching vision is to be achieved. More details of the early stages change management approach in relation to this vision is documented elsewhere (Wilson-Medhurst et al, 2008). This section of this paper outlines the initiative to nurture a community of ALL practitioners actively engaged in researching their ALL practice. The initial supporting framework for this community building activity is outlined in Wilson-Medhurst, 2008 and its alignment to Wenger's (Wenger, 1998) notion of a Community of Practice (CoP) is also explored there. Its significance in winning hearts and minds (influencing attitudes, values and beliefs) lies in its role within the change process as one of a number of enablers of change through which staff are engaged in shaping and developing their own ALL practice.

The initial focus for this CoP was the decision in late 2007 to set up a Learning Teaching and Assessment advisory group, reporting to the faculty Quality, Learning and Teaching committee. As documented in Wilson-Medhurst, 2008 this group chaired by the faculty Teaching Development Fellow has an explicit teaching quality enhancement remit especially supporting innovation in teaching, learning and assessment. To support research and evaluation activity around ALL innovation, the faculty provided funds to support a mini-project in one of each of the (then) faculty's seven departments. The LTA project leaders are members of the LTA advisory group. Thus there is a 'hub and spokes' structure supporting the CoP. At the 'hub', set within the context of the faculty's learning and teaching vision, there is the LTA advisory group, while the 'spokes' are the mini-projects. Mini-projects are shaped and defined by the participants (LTA project leader) with the support of the TDF and other members of the LTA group

as well other departmental staff in contact with the project. Effectively the project leaders become change agents working 'in' the system in a manner described by Seel, undated. Below is a list of LTA mini-projects running in 2008/9, they are all focussed at modular level.

Department*	LTA Project title
Built Environment (BE)	Involving part-time students in improving their own and full-time students' experience through 'contact with practice'
Computing and the Digital Environment (CDE)	Case study based teaching, learning and assessment methods to promote Student-Led Learning Improving the learning experience for first year students includes use of voting system technology
Engineering and Knowledge Management (EKM)	Development of project led learning approach to encourage student engagement Use of technology to support activity led pedagogy includes use of Just-in-time (JIT) lecture capture
Mechanical and Automotive Engineering (MAE)	Performance engineering challenge through Activity Led Learning
Mathematics, Statistics and Engineering Science (MSE)	Final form of project in progress but likely to relate to some aspect of the deployment of serious games to promote student engagement.

*NB two departments have two projects as a result of departmental reorganisation from August 2008 on.

Figure 1. EC LTA projects running in 2008/9

However since August 2008 the 'change process' has evolved to embrace other projects and new members have joined the LTA advisory group. A key project is a six week integrative first year activity led experience piloted by a team within the Mechanical and Automotive Engineering department led by the programme manager for mechanical engineering (see Green and Wilson-Medhurst, 2009). This demonstrates how this hub and spokes structure can evolve to support developments as they arise but all set within the context of an overarching L&T vision.

Student Experience Enhancement

The development of the new teaching and learning culture with the preparation for the move to new premises demanded a critical review of the entire ethos of the faculty. Establishing ALL as the pivotal pedagogy led to consideration of the impact of the changes on other aspects of student life. In Coventry as in many

universities, all too often it transpires that student-facing systems and processes within faculties, but also central university services, have been designed and organised for the convenience of administrative process rather than prioritising students' needs. However refocusing and remodelling the student services and support provision is no easy matter.

The adoption of a "customer service" approach to students in higher education has been the subject of much debate in recent years, for example Cooper argued that the complex relationships between provider and consumer in education make inappropriate any move towards commoditisation (Cooper, 2008). Conversely, it has been proposed that for England in particular, the introduction of "top up fees" has made this inevitable to some extent (Maringe, 2008). It is clear from student surveys like the English National Union of Students (NUS) National Student Survey that students have high expectations about service provision. They are encouraged to make clear any dissatisfaction about negative experiences, through the various channels available. In recent years there has been a move towards engaging parents more during the admissions process, partly for providing reassurance, but also acknowledging that family members often provide essential financial support for students and seek evidence of potential value for money. The vast quantity of publicly available information and increasing use of university league tables, used to distinguish between HE providers in the UK, ensures that student satisfaction remains high on the agenda for all UK institutions.

In the light of the local and national situation described above, during 2008 the Student Experience Enhancement Unit (SEE-U) was conceptualised and then established in the faculty, becoming fully operational in October 2008. The SEE-U vision is to improve the provision of student services and support, both within the faculty and elsewhere in the University. The Unit was/is viewed as change-management vehicle for faculty student services, operating in conjunction with the faculty's LTA Advisory Group. SEE-U is concerned with any aspect of the student experience for all categories of faculty students.

The concept of the Student Journey and the Student Road Map (Glendinning et al, 2008), defined both breadth and depth of the Unit's remit. In summary the faculty believes that it is important to ensure that all members of the learning community have a rewarding experience and positive impression of the faculty and the University throughout their involvement in whatever role or stage, starting with first contact, persisting beyond graduation and employment. SEE-U was established as the driving force to promote this ethos. Currently SEE-U is

the only provision of its type at faculty level within the University, although there are centrally based University services that overlap with part of the Unit's remit.

The Unit is staffed by three full-time staff and a team of Student Advocates. The three full-time members of the team, Finance Liaison Officer, Faculty Assistant Registrar and Academic Manager Student Experience, each normally takes the lead on issues within their area of expertise, but the team operates together to provide mutual support and to build the intelligence. The Advocate team currently consists of nine carefully selected students, one PhD student, seven taught postgraduates and one final year undergraduate. Each Advocate normally works between 12 and 20 hours per week for SEE-U, working around individual study and learning commitments.

The Advocates are a small part of a larger team of approximately 130 enrolled students employed by the Faculty and paid hourly, to aid operational efficiency in different ways. The contribution from the student/employees is a great asset to that faculty, but this initiative has other benefits, including providing much needed financial support, practical skills training and valuable work experience for the students.

SEE-U's main activities can be divided into three types, responsive, planned and pro-active.

Many other agencies and individuals, from inside and outside the faculty, are consulted and involved as appropriate. Each item arising is recorded and followed through to completion.

SEE-U Responsive: The Student Advocacy service provides a contact point for students and staff with a wide range of non-standard difficulties. The team consults and utilises appropriate channels to achieve effective and complete solutions.

SEE-U Pro-active: The Unit conducts research, consults widely about good practice in student support matters elsewhere, organises and conducts events, surveys, interviews and focus groups to identify areas of weakness and strength in all areas of the CU student experience. The demand can arise through SEE-U's own activities or from requests to support research and activities both within and external to the Faculty.

SEE-U Planned: A prioritised list of activities and tasks is maintained related to known problems, typically arising from the reactive and pro-active activities described above, student survey feedback, Course Consultative Committees (CCCs), staff suggestions and research. The team investi-

gates and negotiates with stakeholders about possible corrective actions with the long-term goal of encouraging systemic improvements to non-optimal or defective student-facing systems and processes.

The Academic Manager Student Experience coordinates the team's activities. Authority for agreeing and implementing changes is gained through the Associate Dean (External).

In its first four months of operation, SEE-U has proved to be useful and effective, with many staff and students making use of the services on offer. The Unit has been particularly active in supporting the evaluation of ALL pilot activities. However as with any change, the introduction of the Unit was not universally welcomed by staff, either within the faculty or elsewhere in the University. Increasingly though faculty staff are becoming aware of the benefits the Unit brings and demand for support, particularly for advocates' time, is continuing to grow beyond all expectations and stretching the limits of the team's capacity.

Where the Unit has been less active so far is in the area of planned activities for improving support systems. The SEE-U team have identified many areas and systems where intervention is overdue, but progress on most of these problems has been constrained by limited resources. However there has been one important successful systemic change, resulting from a series of problems identified from the advocacy service activities: a new procedure for managing support for disabled students has been negotiated by SEE-U in consultation with a complex network of agencies and individuals, within the faculty and centrally within the University. The new procedures have been designed, an administrator has been appointed and the new system is currently being phased in. Although it is too early to make claims about the benefits of the new system, succeeding in reaching agreement about this rather complicated process has provided useful experience in utilising an inclusive approach to change management.

Now the Unit is established the advocates are beginning to contribute to decisions about student experience and support provision under the ALL pedagogy and in the design for the new faculty building. The future success and potential of the SEE-U contributions to any improvements and innovation depends largely on continuing to forge a common purpose with the ALL LTA advisory group and together adopting a sound approach to promoting and managing change.

Approaches to change management

Significant changes are being planned, affecting all aspects of the faculty, to accommodate the emergence and adoption of ALL. However it is increasingly apparent that the faculty should not be embarking a fixed term three year project, but instead be seizing this opportunity for an innovative new approach, leading to the development of a culture of continuous and sustained improvement.

Many models and approaches to management of change have been proposed in recent times for use in the higher education sector. In view of the scale and complexity of the task in hand, the decision has been taken to adopt a combination of different approaches in recognition that organisations are complex adaptive systems (Stacey, 1996) and that linear approaches to change management are unlikely to be effective.

It is also widely recognised that effective management of change can be facilitated by empowering, involvement and active support from and for those involved. It is important to avoid blatant imposition of changes, particularly where those affected can perceive no clear benefits. Consensus was recognised by Knoster et al as an essential component for effective management of change (Knoster, Villa, Thousand 2000). The table below illustrates this model and anticipated problems if one factor is not attended to in the change process.

Vision+	Consensus+	Skills+	Incentives+	Resources+	Action Plan	= Change
	Consensus+	Skills+	Incentives+	Resources+	Action Plan	= Confusion
Vision+		Skills+	Incentives+	Resources+	Action Plan	= Sabotage
Vision+	Consensus+		Incentives+	Resources+	Action Plan	= Anxiety
Vision+	Consensus+	Skills+		Resources+	Action Plan	= Resistance
Vision+	Consensus+	Skills+	Incentives+		Action Plan	= Frustration
Vision+	Consensus+	Skills+	Incentives+	Resources+		= Treadmill

Figure 2. Factors in managing complex change (Knoster, Villa, Thousand, 2000).

The above model demands that all six elements must be there to ensure success. To facilitate the transition to the new faculty ALL pedagogy this model (and others) are being used in a non-linear way to enable the change process. The table below illustrates how different aspects of the faculty's activities link to this model. It helps to focus attention on what is required and where gaps might cause problems as outlined above, but a simple sequential process is not assumed. This is change management through the lenses of systems thinking and complexity theory. For example as illustrated below the LTA advisory group, working with support from SEE-U, is utilising results from the on-going evaluation and reviews of the pilot ALL studies to refine the pedagogy, assessment and support provision.

Priorities/activities 2008-9	Key factor(s)
Refine vision statement/ALL definition	Vision – buy-in
Learning, Teaching and Assessment (LTA) Advisory Group continues to operate and provide oversight of ALL related pedagogic developments. Departmental representatives as change agents.	Vision, Consensus, Skills
Bottom-up funded projects continue plus others/set up Applied Research Group (ARG) in ALL	Consensus, Skills, Resources, Incentives
Staff seminars/visits to other institutions in UK and overseas/conference attendance and paper presentation	Consensus, Action Plan
Creating (e)resources/staff development workshops	Resources, Skills
On-going action research to evaluate interventions with support from SEE-U	Consensus, Action Plan
Building space design	Resources, Action Plan
Utilisation of staff appraisal process	Skills, Incentives
Redesign administrative support services, piloting and evaluation, led by SEE-U	Vision, Action Plan, Consensus
Investigate good practice in employing students, including management and training provision	Vision, Skills, Action Plan, Incentives

Figure 3. EC priorities and activities in 2008/9 to facilitate change

The above activities aim to influence the change process largely through empowering staff and involving students but also by acknowledging that bottom-up activity is unlikely to succeed on its own and there needs to be some oversight by the LTA advisory group and the SEE-U. This oversight is to help co-ordinate and support the relevant activities including action research within the ALL pilots, and to help channel the evidence that emerges to the appropriate managers, committees and advisory groups within the faculty and university. This is to inform the on-going change process. The departmental representatives (champions) within the LTA advisory group are also vital here too. They have a change agent role within their specialist subject areas, encouraging and supporting colleagues to examine their current teaching practices and explore ways to adapt the experience for their students towards an activity led approach. They can also advise on resourcing and infrastructure requirements for the ALL pedagogy and any problems with current systems and processes.

A popular trend generally in process improvement is to adopt a lean approach to systems and processes. This has great appeal in view of the high level of unwarranted bureaucracy inherent in both faculty and central University processes.

According to Martin and Arokian (2006), although this research has focused mainly on the health sector, lean can apply equally well to higher education. In consequence, lean techniques will be included in the process remodelling activities driven by both SEE-U and the faculty advisory group. For example the re-design of student support services and administrative procedures will seek to simplify current practices, where possible focussing on the needs of the student. Coventry University's internal programme approval and curriculum design processes are likely to be another candidate here.

Another methodology considered is the Capability Maturity Model Integration for Services (CMMI-SVC), developed by the Software Engineering Institute at Carnegie Mellon University (CMMI-SVC, undated). Although this is ideally suited for promoting and developing a continuous improvement ethos, full implementation would be difficult to justify given the scale of the task at hand. However there are some interesting aspects of the model that could be applied to developments in higher education, if used selectively. Particularly, it would be a useful exercise in the transition phase to map the capability levels, using CMMI-SVC "Key Process Area" characteristics, for some functional and academic areas of the faculty. The outcomes could then be utilised to inform action plans for improvement by targeting areas assessed as less mature.

There is great enthusiasm already for ALL and its implications in parts of the faculty, but there are some areas where reluctance and scepticism predominate. Some of the more mature academic staff continue to express unwillingness to modify their teaching and assessment methods, but there are also a few pockets of negativity amongst some of the younger academic staff. It is of interest to note that the evaluation of the Laurea Learning by Developing (LbD) innovation (Vyakarnam et al, 2008, pp10, 36, 48-50) reported similar cases of denial and resistance to their initiative. In the earlier experience at Aalborg in their move to Problem Based Learning there was also considerable scepticism concerning their educational philosophy (Caspersen, 2006, pp7). There is still time and scope at Coventry University to convince many more academics of the merits of the ALL pedagogy. This in part, will rely on providing the evidence of successful implementation in those areas that are already utilising ALL and/or who are piloting and evaluating new activities. It will also depend upon shaping systems, processes, building (learning) facilities and infrastructure to ensure they are supportive of the ALL learning and teaching culture. The new EC building at Coventry is an excellent opportunity to do just this.

It is crucial that those members and parts of the Faculty not directly involved in teaching and learning activities begin to adapt to more appropriately meet the

needs of today's students, together with the move to a less conventional use of learning spaces and timetables. Any evidence of benefits from improvements to the general student support systems and structures should naturally begin to engender confidence and encouragement from all types of staff in the Faculty. SEE-U has a key role to play in this respect in promoting and encouraging the drive for the evolution of a student-focused approach in all the faculty systems and processes.

Influences far and wide, progress so far

The Faculty strategy and decisions about teaching and learning policy and details of the new building have been greatly influenced by evidence from many similar initiatives in other parts of the world, including Queen's University (Canada), University of Queensland (Australia), University of Massachusetts (USA), Strathclyde University (Scotland), Aalborg University (Denmark) and Laurea University of Applied Sciences (Finland).

In examining the practices in these different institutions one interesting aspect of great relevance to Coventry is the design and use of learning (building) facilities. Some institutions for example have bespoke facilities (e.g. Queen's) while others have modified existing buildings (learning spaces) to align to their pedagogy (e.g. Laurea). What seems to be important is that attention is paid to space and that there is a recognition that the learning (building) facilities can have a profound impact on the learning experience. Space has been identified as the 'fourth pedagogical dimension' (Kiib, 2006) and this is an important aspect of the learning experience that Engineering and Computing at Coventry will focus on as part of its planning and forms a key part of the evaluation of its pilot activities.

As discussed earlier employment of students is essential to the faculty's operation. However the SEE-U Advocacy role in particular to some extent still is viewed a controversial decision by colleagues in the faculty and elsewhere in the University. Student Advocates have access to highly confidential and sensitive information about themselves and other students. The dual student/staff status of Student Advocates means that an unprecedented amount of trust has to be placed in the integrity and honesty of individual students. Advocates therefore need to operate within certain pre-defined limits and exercise a high level of discretion. The decision to employ students with such responsibilities was based on observing similar role models operating successfully elsewhere, particularly at Boston University, UMass and PACE in the USA. On-going training and support for all the student/employees has been a key necessity for their effective

deployment in the different roles. The investment has been rewarded by evidence of their increasing skill levels and this has been particularly aided by the low turnover so far in the Advocate team.

At UMass and PACE in particular the student helpers studied were appointed in a hierarchy of roles, with senior helpers supervising the juniors, suitably rewarded financially for the additional responsibility. After only a few weeks of operating the SEE-U an advocate team leader emerged and the role is gradually developing. With the potential expansion from September 2009 of the Unit, the advocate team, and the other paid student helper roles in the Faculty, there is a need to review the distinction between different types of student/employee, the training provided to all and the internal supervision requirements.

What the future holds

The results so far from pilot studies of ALL approaches in the faculty indicate that the ALL pedagogy is generally very favourably received by students and staff alike. Areas for improvement have also been identified but these in the main, have focussed on organisational and operational issues rather the ALL learning and teaching approach itself. For example in relation to the pilot first 6 week integrative experience in mechanical and automotive engineering the students' suggestions for improvement focussed on structural, organisational and operational issues but not the style of learning which was favourably received (Green and Wilson-Medhurst, 2009). In the same pilot staff identified improved enthusiasm for study amongst students, but also recognised some struggled to maintain the 'heavy' timetabling and workload demands in later stages (Green and Wilson-Medhurst, 2009). This points to improving the design of the delivery rather than changing the style of learning.

Informal feedback from staff planning for ALL delivery indicate resource concerns particularly while the new building facilities are still under construction. Pilot delivery, studies and evaluation will continue during 2009 and beyond. The experiences of staff and students are being documented to allow other staff, inside and outside the University, to learn from these pilots. Future implementations of ALL will be modified and refined according to the findings from studying the pilot operations.

In October 2009 all undergraduate students joining the Faculty will begin with an integrative ALL experience during their first 6 weeks. The details are being decided at present and will vary between academic subjects and departments.

The definition of ALL provides for great flexibility and different interpretations, which is a deliberate decision to encourage innovation.

With the needs of non-teaching staff in mind the transitional planning activities include exploration of the feasibility of gradually expanding the number of employed students in advocacy and possibly other student-facing support roles. This would necessitate careful management of the appointment, training and supervision of the expanded student/employee team. As discussed earlier, a hierarchy of internal supervisory roles could be built into the range of available student/employee appointments.

If successfully adopted this policy could provide a cost-effective way to provide a more robust and student-centred support service than is currently in place, operated by students for students. Full time staff would benefit greatly from increased student/employee support. Support staff would spend less time responding to simple student queries and have more time to complete the essential back-office duties.

Benefits would also extend to academic staff. Current SEE-U student advocates are already beginning to develop novel specialist support skills, for example mentoring students with severe disabilities. Part of the role is to liaise with academic staff to advise and support preparation of materials in special formats, essential to the learning process. Other employed students, currently designated Interns, are assigned to academic departments in the role of teaching aide, directly supporting the academic staff and students, for example by materials preparation and administration of assessment.

SEE-U's planned activities, incorporating effective management of change, needs to begin to influence the design and development of systems and processes appropriate to serve the student-centred approach evolving in the lead-up to the move to the new building in 2011.

Conclusions

The Faculty's transition towards a more effective approach to sustainable education and development of engineering and computing students is being aided by association with many other universities who have reached different stages in the same process. Drawing on such examples and experiences is enriching and strengthening the different ideas, decisions and processes on the journey to 2011, when the new building is handed over to the faculty. In turn it is hoped

that by documenting and sharing Coventry's experience, we will be able contribute to similar developments in other places.

The target beneficiaries, for all those universities with the courage to make such changes, are the students of the future, who will be able to develop their knowledge, talents and skills in an environment that strives to understand the needs of each new generation of learners, nurturing and supporting the learning process. It is hoped that ALL and similar approaches will allow future graduates to become more informed and equipped than many current and previous students, enabling them to enjoy their learning experience and succeed, adapt and prosper in the course of their careers.

A great deal of work needs to take place in the faculty leading up to 2011 to ensure that new style courses, systems and processes are suitably tested, with time to adjust if necessary, and then phased in. There is little doubt that the whole learning community will benefit greatly from a successful move to an approach such as ALL, particularly with the availability of purpose designed learning spaces and prestigious working accommodation for staff.

The urgent challenge is the need to encourage the sceptical staff to appreciate the benefits of the ALL pedagogy itself and to embrace and exploit the opportunities presented. There is also a need to identify the resources including learning (building) space requirements and to influence relevant aspects of the new building design accordingly. The staged approach allows time for the evidence to emerge and for the ALL pedagogy and its implementation to be shaped within the various specialist subject areas that make up the faculty. Key to this is the adoption of change management methods sympathetic to this problem. This means change management through the lenses of systems thinking and complexity theory in recognition that the university, the faculty and its constituent departments are complex adaptive systems where linear approaches to change management are inappropriate and unlikely to succeed.

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21 Learning by Developing: Philosophical and Socio-Cognitive Foundations for Collaborative Approaches to Student Learning

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Anyone who has tried to learn to skate or swim knows that learning isn't simply a matter of outputs and inputs. Learning may not even arise from teaching.

This essay is about new de-centralized theories of Artificial Intelligence (AI) and social cognition. The essay sets out to assess the educational implications of these new theories for the kinds of classrooms in which student choice is empowered, in which students are encouraged to discuss freely, in which they research in groups, and in which students are invited to respond to 'real-world' learning scenarios. This is known as 'learning by developing' in Finland, and as 'problem-based', 'case-based' or 'enquiry-based learning' in the Anglo-sphere. Although the author is an Australian academic historian teaching European history using these approaches, the suggestions in this paper are seen as also applying to vocational education.

Traditional didactic approaches to teaching are premised on a catch-and-toss model of learning. Lecturers pitch. Students catch. Students in turn toss stuff back in essays and exams. As conceived in Artificial Intelligence (AI) terms, teaching conceived as 'catch-and-toss' construes the kinds of thinking elicited in classrooms as equivalent to jugglers working in pairs and in multiples of pairs. 'Catch-and-toss' models envisage learning as an encounter of separate inner-controlled and inner-processing minds (homunculi) – the teacher's tossing; the student's catching. These homunculi are the 'ghosts in the machine' Gilbert Ryle derided (1949). According to this traditional script for teaching and learning, the sending and receiving minds achieving the learning are envisaged as separate

and sequential from the sensory systems taking stuff on board. The teacher-as-pitcher and the learner-as-fielder often seem like cavorting coconuts with cerebellums; each seen as having discrete and internalized, not socialized, meaning-making and information-processing systems; each supposedly with distinct, rational and deliberative (a-social) mind-selves. In AI terms, 'teaching' is then seen as the art of affecting discrete human Central Processing Units (CPUs): each student-mind is seen as individual, each is supposedly a given whenever they enter the classroom, and each is somehow a mystery because each learner is supposedly sovereign in his or her mental processing sphere. Teaching is then seen to involve instruction: making something substantive (a curriculum point) arc (in public) across teacher-and-student sensory systems sufficient to enable 'a learning outcome' to occur. Learning is then seen as any actual altering (in private at first, operating in the necessarily unseen CPU recesses of mind) of the student mind – and of the teacher's mind too; no teacher exits a classroom unchanged. The model derives from Descartes' distinction between mind and body (Wilkes, 1988: 21-27).

The purpose of this essay is to suggest a line of argument for why the didactic model of teaching is wrong – or rather, not as right as for higher education as many think it should be. A different view of cognitive foundations of learning is here suggested, a foundation re-validating enquiry-based learning and returning to Socrates. But this different view of higher education is here implied from new studies of AI and from new studies of social foundations of individual psychology. A view of teacher and student cognition emerges that is neither as a-social (individualized) nor as dis-embodied (inner-CPU-cerebral) as catch-and-toss models of teaching make it seem. It turns out instead that learning 'performance [is] a language of social action', and that 'the social structure [of life and of any classroom] is not only the framework on which the communication [of learning] is based, it is also the mechanism that is in place prior to the interactions to ensure that they take place as required' (Hutchins, 1995: 224, 225).

Consider an example. Edwin Hutchins, an anthropologist-cum-psychologist, observed for instance how a big ship is actually steered into a modest berth. The steady motion of a vessel edging towards its berth didn't just function as outcomes of Captain's instructions given and Captain's instructions received (Hutchins, 1995: 228, 290). The sociability in action of all the crew on the bridge and in the engine-room amounted to more than their Captain's set of instructions. Each worked with each other and with his or her sets of tools:

It is difficult in this [ship's berthing] context to say what stands between what, but [the crew] certainly all participate in the organization of [berthing] behaviour. The

question of individual learning now becomes the question of how that which is inside a person might change over time as a consequence of repeated interactions with these elements of cultural structure [on the ship's bridge] (Hutchins, 1995: 290).

Treating this social aspect of cognition seriously then has direct implications for models of student learning:

With the focus on a person who is culturally engaged in a culturally constructed world, [we then have to] soften the boundary of the individual and take the individual to be a very plastic kind of adaptive system. Instead of conceiving the relation between person and environment in terms of moving coded information across a boundary, let us look [instead] for processes of entrainment, coordination and resonance among elements of a system that includes a person and a person's surroundings (Hutchins, 1995: 288).

Learning begins to appear as something acquired through social activity, rather than as an outcome of an individual activity, whether it's teaching or whether it's study.

Some new social science helps suggest why 'enquiry-based learning' or 'learning by developing' really work. One such set of the new understandings derives from (non-representational) theories of AI associated in one way or another with the Massachusetts Institute of Technology (MIT) (Brooks; Hutchins and Clark, already cited): these people were trying to build a robots with a single and central 'mind' that controlled everything the robot perceived and did. They then considered the implications of their failure. Another set of new understandings (not much discussed here) derives from French epistemological sociologies of human creativity and association, each lovingly correcting deterministic excesses in Michel Foucault's theory of discourses: the importance of the un-said-but-often-done in Pierre Bourdieu's concept of in-grained action, *habitus* (Bourdieu, 1990, Book 1, ch. 3), and Michel de Certeau's emphasis on agency, the ability of *usagers* to respond tactically to *le reçu* (de Certeau, 1990: Part 1). These sociologies correct and complement Michel Foucault's archaeological social science of discursive institutionalization (Jones, 2000). A third set of understandings arises from new psychologies of 'distributed' or social cognition: whether considered from the perspective of historical psycho-anthropology (Donald, 1997 & 2000) or from different narrative-theory or 'storey-ing' perspectives, one synthesizing Bakhtin and Vygotsky (Wertsch, 1994, 1995, 2001, 2002 & 2008), the other exploring narrative paradigms (Bruner. 1985, 1986, 1991, 1996, 2002). The result is a new-ish idea of 'teaching' in higher education that emphasizes

social scaffolding and de-centering active learning. It is less instructional. The new ways won't follow Descartes in separating mind from body, or mind from body from world. This new-ish idea of 'teaching' in higher education won't and can't extricate individual perceptions from social settings and social actions. It prefers a Aristotelian model of *psyche* that re-unites 'body' and 'being' with 'mind', and which doesn't reduce 'consciousness' to a set of 'ideas' (Wilkes, 1988: 16-27, 38-39).

The traditional didactic model of teaching reflects Plato's theory of representation.⁷⁶ This theory maintained teaching consists in helping others to escape the cave of their perception. Plato (consequential?) decision to write things down also promoted a professorial idea of 'teaching'; the teacher set herself to show, as definitively as possible, the underlying forms of things (*episteme* ἐπιστήμη) (Nussbaum, 1997; Gadamer, 1979: 135-36). Plato's model was also influenced by the declaratory modes associated with the new technology of writing, then only about 200 years old in Greece. Plato assumed, as writers are wont to do, that what people know is only what they can represent to others as knowing. Plato and the Greek Academy then helped shape didactic traditions of teaching, helping steer education towards professors and precepts, and away from the orality and sociability of classical rhetorical traditions, especially after Augustine's *Civitas Dei* reconciled Plato and Plotinus with Christianity in the fourth century CE, and after Aquinas' *Summa Theologiae* assimilated Aristotle in the thirteenth century CE.

Plato preferred universals to social knowledge. The foci of the latter differ: they are particular and they depend on contexts. 'Social knowledge', 'practical knowledge', 'knowledge-in-the-world-about-the-world' – whatever it might be called – is all about studying anything arousing 'concern' in humans. Martin Heidegger thought of social knowledge as eliciting *Angst* or 'heedfulness (*Besorgen*)' (Heidegger, 1927, 1996: Part I ch. II §12, ch. III §15, Part II, ch. IV §69). Plato's failure to address issues of human 'concern' already suggests important limitations of his model of teaching and learning.

⁷⁶ I know that what follows is – to a degree – unfair to Plato. He is the one who tells about Socrates! And he also worked with Aristotle for three decades or so. In choosing to emphasise an important thread in Plato, we should recognize that Plato showed us almost every other possible thread by troubling to do philosophy in dialogue form. But Martha Nussbaum's point about the long-term epistemic effects of Plato's decision to write still apply (Nussbaum, 1997; Jones, 2007).

'Concern' was however well known to Aristotle as *phronesis* φρόνησις as 'know-how', a kind of understanding grounded in concrete situations, quite different from the science-like 'know-this' of studies of universals or of underlying forms of things (*Nichomachean Ethics*, book 6; Wertsch, 2002: 119). On 'know-how', Hans-Georg Gadamer explained it was 'practical knowledge ... directed toward a concrete situation' (Gadamer, 1989: 19):

Their object is man and what he has to know about himself. This human self-apprehension concerns him from the very first as an acting being; it does not in any way aim at verifying what is always the case. Quite the opposite, it relates to what is not necessarily what it is and what could be otherwise at some particular moment ['Know-how' is a human] project of his own possibilities (eidos) (Gadamer, 1979: 138)

['Know-how'] is clearly not objective knowledge—i.e., the knower is not standing over against a situation that he merely observes; he is directly confronted by what he sees. It is something he has to do. (Gadamer, 1989: 312)

This relativized and context-specific 'know-how' or 'concern' also interested Martin Heidegger. Heidegger thought, for instance, about how a hammer in a carpenter's hand has a circumspect 'know-how' kind of knowing: once embodied, the hammer's fitness-for-purpose, ready-at-hand and present-to-hand, involves a real and active kind of implicit knowledge (Heidegger, 1927, 1996: Part I ch. III §13 & 17; Clark, 1997: 171; Wheeler, 2005: 18, 59-60, 128-29, 135-37). This was not at all the same as 'skill', an artisanal knowledge (*techne* τέχνη); clay remains clay unless and until a potter picks it up; its final product is achievable, forgettable and habitual (Gadamer, 1977: 139-44; Gadamer, 1989: 313-15).

The 'concern' dimension in 'social' or 'practical' knowledge is important for educators of every kind of social science – whether in the humanities and sociology, in business administration and in health care – to keep in mind precisely because it is a form of knowledge that is active and convivial, embodied and contextual (Flyvbjerg, 2001: ch. 8). No catch-and-toss model of teaching and learning can apply. Gadamer explains this is because the kind of 'know how' we want to teach necessarily requires shared reflections, not fed precepts. Social facts can't fly into learner's laps; they are inferences drawn from:

situations-for-[their]-action Our awareness of the situation is a consciousness of an act which cuts through the situation (Gadamer, 1977: 143).

The 'concernedness' of social knowledge is no less real for being implicit and often non-declaratory. It exists in the rich task, in the activity elicited by the learning. It even exists in spite of the possibility of its know-ers being barely aware of

their knowing (Hutchins, 1995: xii) – the same vex point is often made by students to teachers after they have engaged in collaborative learning. This difference between received ‘precept’ and shared ‘concern’ – i.e. between (often-declaratory) universalizing ‘teaching’ and (less-declaratory) particularizing ‘teaching’ – distinguishes models of learning about science from models of learning about society.

The difference tends to surprise educators because of the neglect, in discussions of teaching and learning, of the social dimension of cognition. Catch-&-toss models of teaching and learning have been premised on a coconut-to-coconut theory of cognitive transmission. The teacher is seen as a sovereign thinking individual. Each student is another. Each and every individual perceiving mind is then seen to be governed by an internal processing mind: a homunculus in psycho-medico-speak, or Central Processing Unit (CPU) in Artificial-Intelligence-(AI)-speak. In relation of the social curriculum of ‘concern’, however, there has to be an escape from individual-centric theories of cognition and of learning. The way to escape is by considering ‘the transforming effects [on learning] of the interactions with the tools of the trade’ and of the surrounding ‘social organization’ (Hutchins, 1995: 226).

History has something to offer here. A prior tradition of ancient Greek teaching and learning is worth recalling, even if some of its aspects are now considered as dangerous, even predatory. The influential didactic model arising from the Hellenistic and Medieval scholasticism of the Academies renounced archaic Greek models of learning as-play and as-performance, as dramatized by theatre and as practiced in schools of rhetoric, and especially as evidenced by Socrates’ determinedly dialogic model of teaching. These older play-and-performance approaches to learning sought far more than learning outcomes. They valued style. They didn’t exclude poetry and art. They were intensely social. They were also utterly oral, seldom written. They had more potential to subvert, ever ready to interrogate any form of authority. They took the Gymnasium model seriously, eager to reconcile mind and body to the extent of exalting athleticism and even to the extent of having sex with students (Nussbaum, 1997; Jones, 2007).

In a lecture series at the University of Freiburg in 1951-52 entitled *Was heißt Denken?* (Heidegger, 1968), Martin Heidegger revived the best aspects of this prior tradition, trying to save ‘teaching’ from scholastic didactics. ‘Teaching’ really meant ‘letting learn’, he argued:

Teaching is even more difficult than learning. [It is not] because the teacher must have a larger store of information.... Teaching is more difficult than learning be-

cause what teaching calls for is this: to let learn (das Lernen-lassen). The real teacher[’s] conduct ... often produces the impression that we properly learn nothing from him, if by ‘learning’ we now suddenly understand merely the procurement of useful knowledge (Heidegger, 1968: 15).

Heidegger explained that teaching to-let-learn rather than to-deliver-outputs was really a teacher’s effort of ‘willing[-students]-to-know’; the teacher enables students’ resolute action, aiming to give them ‘means to be able to learn’ (Heidegger, 1935, 2000: 22-23). On these bases, the catch-&-toss, coconut-to-coconut approach of the traditional higher-education classroom can begin to be slowly being put aside.

One major reason why it doesn’t work has emerged in AI. No-one has been able to build a robot with a CPU, but they can build lots of robots with de-centralized systems based on data processing chains of localized action, localized observation, and localized response, and they have been able to sequence and coordinate these chains. None of this approximates a homunculus (Wilkes, 1988: 25). Stanley Kubrick’s ‘Hal’ in *2001* still eludes. It is no longer even clear, in AI, whether there is a ‘clear division between [disembodied] perception (abstraction) and reasoning in the real world’; the abstraction may just function to reduce input data unnecessarily; it may only be a disguised output coding anyway, a ‘self-delusion’ (Brooks: 140-41). The educational implication is that while it is quite possible for a ‘teacher’ to scaffold learning systems, it is impossible for a ‘teacher’ to try to pre-programme homuncular-like centralized-processing responses in students. Rodney Brooks explains:

there are no rules which need to be selected through pattern matching. There are no choices to be made. To a large extent, the state of the world determines the action of the [AI] creature (Brooks: 145).

Real learning is then still much the same as a baby’s experiential push-me-pull-you play on a mat: grab this, suck that, roll on the other thing (Clark, 1995: 100-101). To be sure, parents and carers still influence learning outcomes simply by their scaffolding of the mat and by introducing (some of) the localized learning objects (they may not even be toys).

Cognitive psychologist, Herbert Simon, assists with another sort of explanation. In an essay, ‘The Psychology of Thinking – Embedding Artifice in Nature’, he mentioned how he once contemplated an ant moving across a beach (Simon, 1981: 63-65). Managing to think more about anything than I have ever been able to do on a beach, Simon decided to chart the path of an ant, eventually asking colleagues, without telling them an ant did it, to interpret his topographical plot of

the ant's 'weaving, halting' way home, negotiating ripples of wind and wave, detouring pebbles: 'a sequence of irregular, angular segments—not quite a random walk, for it has an underlying sense of direction, of aiming toward a goal' (Simon, 1981: 63). Colleagues responded by envisaging a skier's slalom or a sloop up-wind amid islands.

Students also have an ant's (seemingly) vague sense of purpose, the same encumbered and distract-able, irregular and angular path. The teacher as preceptor may like to think of study as a straight path, forgetting his or her own studenthood, but in fact the world in which the student has to study affects the student's learning every bit as much as the rippled beach affected Simon's ant. Venturing a hypothesis, Simon suggested: 'the apparent complexity of human [and ant] behaviour over time is largely a reflection of the complexity of the environment' (Simon, 1981: 65). These hypotheses should prompt educators to scaffold learning environments that are as active and as social as possible to achieve the 'intimate association of cognitive processes with emotions and feelings, and the determination of behaviour by the operation of a multiplicity of motivations operating simultaneously' (Simon, 1967, 1979: 38). A didactic approach to teaching and learning envisages ant society as serried and ordered. It then confines that society to drill halls. It forgets the buzz of activity in ant colonies. Most higher-education learning spaces – lecture halls and seminar rooms – still conform to the drill hall stereotype.⁷⁷

The didactic model is muddled and tautological. Each mind is supposed to be controlled by internal homunculi. Every such homuncular CPU is then said to be controlled by its self-hood, which somehow in turn is shaped by ... itself (Minsky: 50). Yet, people oscillate between singular and multiple senses of self: work 'me' and home 'me', but also a reassuring and self-serving fiction (unless I am mentally ill) of a constant and consistent 'me' (Minsky, 1986: 39-42). A conundrum then arises for teachers and teaching, as formulated by Marvin Minsky:

So far as [teacher or student] consciousness is concerned we find it impossible to separate the appearance of things from what they have come to mean for us (Minsky: 54).

One such conundrum leads to another: from whom, then, do we really learn?

A better approach turns 'teaching' into an art of re-staging. The teacher sets up social and environmental scenarios to displace and challenge students' received

⁷⁷ But these spaces should not be dispensed with entirely. There is still a place for the set-piece lecture as a loving free gift to students of their lecturer's inspiration and imagination.

and pre-conceived appearances of things. In their heart of hearts, all teachers know that teacher showing seldom equates to student knowing. From a student mind's-eye point of view, 'learning' is more often an active re-present-ing – i.e., a kind of 'coming alive' (Denning 2002). It is less likely to result from passive representing. A learning object transformed is a learning object learned; new teachers soon know this because the effort of teaching something so often elicits their sense of having finally learned the thing (Goodman, 1977: 22).

Real learning is therefore intrinsically extrinsic. While coconuts can be made to pile up, they can't be encouraged to transform and expand. Real learning accepts that the mind is 'a leaky organ' (Clark, 1997: 52). The human mind expands and transforms best when it is provoked and socialized through association and interaction. The social mind of real learning is indeed irregular and angular, even when common purposes are shared. To achieve that purpose, learning outcomes need to be made more open-ended. Sharing them in social settings helps. Clark writes of 'fluent coupling' and 'adaptive hook ups' (Clark, 1997: 3, 147). Wheeler mentions 'smooth coping' (Wheeler, 2005: 17-30, 135). They are both taking up Heidegger's concept of *Da-sein*: this is Heidegger's depiction of *Existenz*, the quintessential human state of being-there-then and being aware, and doing it all in a world (*In-der-Welt-sein*) alongside others (*Mitdasein*) (Heidegger, 1927, 1996: Intro. ch. I §3-5, Part I. ch. I §9-11, ch. II §12-13, ch. IV §26; Clark, 1997: 171; Wheeler, 2005: ch. 5).

Learning outcomes are none the clearer for just being shown: that's trying to represent something by mirroring it or encoding it (Clark, 1997: 47). Representations of learning outcomes are better conceived in 'action-oriented' terms, involving students in some sort of taking charge 'as action-and-context-specific control structures rather than as passive recapitulations of external reality' (Clark, 1997: 49, 51). Sociable student 'Adaptive Responders' are the new ideal, not individual 'Rational Deliberators' (Clark, 1997: 33). The learning outcomes are better discovered and discussed, having to be embraced in contexts that provoke or displace: the ant on the pebbly beach; the baby reaching out on the mat.

In place of the intellectual engine cogitating in the realm of detailed inner models, we confront the embodied embedded [learning] agent [, i.e., the student] acting as an equal partner in adaptive responses which draw on the resources of mind, body and world (Clark, 1997: 47).

[Psychologists should] examine sensory-motor control, rather than sensation or locomotion separately (the [revived Aristotelian] model of psyche puts [them] at

the same, intertwined levels of the hierarchy). It insists that there is no ... schism between cognition and behaviour. (Wilkes, 1988: 25)

Smooth coping is a process of real-time environmental interaction involving the subtle generation of fluid and flexible context-specific responses to incoming stimuli. Crucially, those responses are not the product of representation-based or reason-based control (Wheeler, 2005: 134).

A teachers' careful structuring of a social scenario is therefore more crucial in enabling student learning than the display *per se* of his or her expertise.

This means that teachers need to shed didactic illusions of teacher consubstantiality with students. One reason is that consciousness is not the same as self-awareness. Life is full of things people deal with, but do not understand. My differential calculus education was once remembered – for a little while, for just a few months in a given year when at school – but never truly understood. I can also use a mobile phone without being aware of how it works (Minsky, 56-58). I had no real understanding of these things. The consciousness would-be-didacts think they shape is actually unstable, ephemeral – never immanent: 'there is no singularly real world of thought; each mind evolves its own internal universe' (Minsky, 151-55, 327, quoting 65). Likewise, 'classical' didactic AI once conceived data processing as separate to, and more complex than, data storage; the new 'Connectionist' AI now recognizes that all data storage is data processing (Clark, 1995: 91-92). In much the same way, student consciousness actually has more to do with 'how [students] think about the records of [their] recent thoughts' (Minsky, 151), not the instructions they were given. Teachers are therefore better advised to enable student discovery by seeking to elicit 'specific behaviours ... organized around the general idea of a subsumption architecture' (Clark, 1997: 32): 'situated activity and real-time response', 'embodied and embedded' (Clark, 1995: 89, 93).

This view of learning calls for student activity that is social, performed and embodied. It doesn't expect to see a leader bird when observing birds flocking (Clark, 1997: 40). In studies of human society – past, present and future – it rather expects students to make a version of their world while working alongside others in that world – i.e., the students are learning in a world that already thinks it knows, but the people who think they know are ready nonetheless to accept that students will learn best by reference to that world and to other learners. Student learning outputs are not thought as just representing a teacher's reality: *mimēsis* μίμησις. Rather, an 'embodied and embedded' social sense of 'rightness' or 'best-fit' is required. Gadamer dubbed it a 'calculus' (Gadamer, 1977:

136). 'Practical know-how learning' in all the social sciences – in the humanities and sociology, in business administration and in health care – then becomes matters of verisimilitudes more than dogmas and digests: working out what works best from particular standpoints (Goodman, 1977: 1-22, 121-38; Goodman, 1984: 30-34, 39). Learners have then to become active. 'Best fit' emerges in dialogue with others in contexts anchored to a real world. The learner is given a scenario – Goodman calls it 'preparedness', a process or a state to be contemplated. The learner is also tooled up with symbol systems: to think in (notational) and to think of (conceptual) (Goodman, 1984: 21-28).

Important new socio-psychological research has explained respectively how this tooling works (Wertsch) and indeed how it evolved (Donald). James Wertsch combines Jerome Bruner's early work on narrative templates and narrative constructions of reality (Bruner, 1985, 1986, 1991) with Lev Vygotskii's Marxist social psychology of the influence of the inter-mental (интерпсихический) on the intra-mental (интрапсихический). Wertsch also adds Mikhail Bakhtin's model of culture as a dialogic inter-subjectivity (дружность) of agents' appropriations (присвоения) to the mix (Wertsch, 1991, 1994, 1995, 2001, 2004, 2008). One important result of Wertsch's work is to shift the focus of debates about higher education – the ultimate effort to equip students 'to appropriate (присвоить)' knowledge – to focus teaching and learning on (1) mediated actions (2) performed by agents (3) using cultural tools. The learner then becomes 'a goal-directed problem solver' (Wertsch, 1995: 15). Cognition is now rescued from the coconut of the homuncular intra-mental and re-situated socially. Following Bakhtin's example, the way to learn is not simply to recall a template or to retrieve a pattern (a 'know-this'; Plato's *epistēmē*); the aim is rather to make the outcome learnt your own (the Russian *свой*); the Russian verb 'to appropriate (присвоить)' means literally to 'make your own' (a form of 'know-how'; Aristotle's *phronesis*). In a comparative study of 'the consumption of historical narratives' in Estonia and in the USSR, before and after 1989, for instance, 'know-how' stuff was involved: 'being able to use historical narratives as a foundation for reasoning about the actors and motives behind the events being discussed' (Wertsch, 2002: 119-20).

'Know-how' or *phronesis* is true aim of higher education in the human sciences – humanities and sociologies, as well as in business education, public administration and health studies (Gadamer, 1989: Part II ch. 4, s. 2, §B). It can only arise when student self-hood is no longer seen by teachers as dis-engaged and individual. It also needs human cognition no longer to be conceived as intra-mental and uni-vocal. Once cognition and self-hood is deliberately set up by teachers to

be socialized, learning become less literal and teaching becomes less authoritarian (Wertsch, 1991: 67-75, 139-40). Students instead are licensed to 'rent meaning' (Wertsch, 1991: 68-69). Settings and mental practices are now seen as reciprocal, dialogic, even playful, and they are always handled somehow (mediated actions) by human agents. The learning agent – i.e., the student – becomes an 'individual-operating-with-mediational-means' (Wertsch, 1991: 12, 33; Wertsch, 1995: 56-63, quoting 63; Wertsch, 2002: 25). Goal-directed actions come to the fore. The whole approach to teaching and learning aims 'to explicate the relationships between human action ... and the cultural, institutional and historical situations in which this action occurs' (Wertsch, 1995: 15, 11).

This is precisely how Merlin Donald (1991 & 2001) has shown how human minds came to frame symbol systems. He outlines a history of the cultural and biological construction of the human mind, but notes it could never have been purely biological. A computational homunculus model of mind could never have *originated* a symbol; they are *ipso facto* social and environmental (Donald, 1991: 1-10). Society and the environment bade human minds evolve systems of increasing performative complexity, like chains of algorithms, to meet the needs of enlarging territories and more complex social groups. Donald thought it happened first by mime. This was the 'episodic' era at the dawn of human self-awareness. Then it progressed even more artificially in the 'mimetic' era by encoding and re-coding (oral language). Finally in the 'mythic' and 'theoretic' eras, it advanced by creating external storage systems (rock-painting, image, text, computer). The 'mythic-theoretic' eras seemed to Donald the most crucial and the most exponential in terms of brain development.

We achieve full awareness only if culture is able to write its key algorithms onto our minds. Evolution has nudged us into this direction, interlocking brain and culture, towards the absorption of individuals by communities of mind. The human conscious process is a specialized adaptation for navigating the turbulent waters of culture as well as the primary channel through which cultural inference can be transmitted back to us (Donald, 2001: 322).

The key to understanding the human intellect is not so much the design of the individual brain as the synergy of many brains (Donald, 2001: xiv)

'Learning-by-Developing' turns out to be as old as civilization.

In conclusion, a re-definition of 'learning' suggests itself. Learning is now re-conceived as a social outcome achieved by the mnemonic efforts and actions of a group using received sets of cultural tools to frame some sort of meaning. The

teacher's role is to give out the cultural tools and to establish the new social settings. In AI terms, this means building activity-producing sub-systems, and coordinating them, without worrying about a central processor or any central representations (Brooks). The teacher needs to offer as many occasions as possible for sub-system [student] actions to achieve local control. This means 'letting learn' (Heidegger), 'fluent coupling' (Clark), and empowering 'appropriations' (Bakhtin via Wertsch). Otherwise we are left with Marvin Minsky's dour alternative: a surrender to self, a state of non-education:

So far as consciousness is concerned we find it impossible to separate the appearance of things from what they have come to mean for us (Minsky: 54).

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22 Takuuteekkari® – Trade Mark of the University of Vaasa for Engineering Student Recruitment

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Introduction

The city of Vaasa lies on the west coast of Finland. On energy sector, it has about 100 companies with 12,000 employees making a total turnover of about 7,500 M€. Thus, Vaasa is the largest centre of excellence in energy technology in the Nordic countries.

The energy industries in Vaasa have shortage of skilled engineers who have a M.Sc. (eng.) degree. For this reason, the University of Vaasa (UV) with the help of TKK (Helsinki University of Technology) started technology education already in 1990, and since 2004 it has independently offered degrees in engineering on the highest academic levels. Naturally, energy and power are the focus of the University, and we emphasise maintaining the high quality of the studies.

Despite reforms in Finnish study programmes in the 2000s, practical industrial training still remains an important part of building up excellence in engineering, also at the university level. Practical training outside the University, in the real working life, is not more obligatory in the new M.Sc. (eng.) programmes of the UV. To help the first-year students to have a proper training experience, the University has created an innovative concept called Takuuteekkari®. Consequently, all our engineering students, without an exception, now have practical training in industry. Furthermore, all the students so far have got a proper job after their graduation.

Concept

The original idea was invented and developed by Professor Timo Vekara, whereas the name Takuuteekkari® was coined by Professor Leena Korpinen, when she was starting the project at the University of Vaasa. The new Finnish word Takuuteekkari® literally means a guaranteed engineering student at the university level; the first Finnish word 'Takuu' means 'guarantee', and the second part 'teekkari' means 'student of engineering at university level'.

We have found the Takuuteekkari® concept very useful for the following reasons:

- after one academic year, the first-year students have studied mainly theory, i.e. mathematics, physics etc.,
- young students do not usually have any previous industrial experience, so practical training is really needed,
- the young engineering students often hesitate to apply for industrial jobs,
- if the engineering students do not get a training position in Vaasa, they do not integrate to Vaasa region after their graduation and often prefer working in other parts of Finland, and
- students can stay in the same student accommodation during the summer period as during the academic winter season.

The main idea is to match an energy company with a young engineering student. The aim is that all the participants gain something, i.e. we have a “win-win-win” case:

- The selected students have an easy access to the industry – without time-consuming sets of applications, as previously. The training positions are attractive and highly wanted by the students.
- The companies will meet the future engineers already in the early stage of their studies, thus ensuring labour and having the possibility to support the students in their studies.
- The University will get more talented new students willing to work in international business.

The project is aimed at all the first year engineering students of the faculty independent of their future main subject. The main subjects of the Faculty of Technology are automation, electrical engineering, energy engineering, information technology and telecommunications engineering. Only the first year students are

now involved because of practical reasons. Almost invariably the students themselves create their careers after that.

An important principle is that all the students are involved, not only the best ones as usual. So, all the students make a list in the order of their preference of the companies where they would like to train for the summer. Of course they are free to find a training position on their own. The training is agreed on by the company and the student, as usual, including employment agreement, salary etc.

For exhibition and marketing purposes we have produced some Takuuteekkari[®] marketing material, such as a handout brochure, a memory stick, a sticker for student coveralls, a stick-on label, a logo for the web page as shown in [1] and an advertising sign, as shown in Figure 1. Takuuteekkari[®] is now an officially registered trademark in Finland.



Figure 1. M.Sc. (eng.) Bertil Brännbacka in regional Know How student exhibition in Botnia hall in Mustasaari, near Vaasa.

Experience and Discussion

In 2009, the number of participating companies is three and the number of participating students is 28. In Vaasa, the practical training started for the first time in summer 2007 in Wärtsilä Finland Ltd, see [2]. During the next summers also ABB Ltd., see [3], and then Vacon Ltd , see [4], started to give summer training opportunities according to the Takuuteekkari[®] concept. We have until now continued the activity on one-year basis, i.e. the companies may quit this activity if they cease to be willing to take part. The number of companies involved can be increased by the number of engineering students. The companies involved have been satisfied with this project. There are also new companies which are willing to take part.

Now in 2009, we have had three successful student selections. All the time the number and the share of students has increased. For summer 2009, practically all the students were willing to take the offered summer training. Was it because of recession or not?

In 2008, an inquiry was made of the students who had been in Takuuteekkari[®] summer training. The questions of the inquiry were:

- Please name positive aspects about your training and
- Please name things to be developed in your training.

Some answers to the first question:

- *“During the summer I learned two production stages in the electric machinery production.”*
- *“There were pleasant workmates and supervisors as well as a positive working atmosphere.”*
- *“It was a great thing to get a summer job related to my own branch.”*

Some answers to the second question:

- *“The salary could be higher.”*
- *“The relocation of a student to the posts, i.e. more demanding tasks, according to work experience is wanted.”*

When more companies were involved, we had to decide, how the students would be assigned between the companies. Now we send students to the companies based on two criteria 1) according to students' own wishes, and 2) based on the number of office workers in Vaasa. All the companies will have at least a previously agreed minimum number of students.

Conclusions

As a conclusion, let us look at our starting point, results and future plans.

Outset

- The industrial energy companies in Vaasa region need all the time young engineers who have at least M.Sc.(eng.) degree.
- The University does not have enough talented applicants interested in engineering studies.
- In the past, most of the engineering students (after one, two or even three years of studies) did not succeed in getting industrial training in Vaasa.

The New Solution Implemented

We have solved the above problems in some extent with the original Takuuteekkari[®] concept, which

- is a trademark of the University of Vaasa for engineering student recruitment,
- has been in use since 2007,
- is an optional possibility for the students and the industrial companies,
- is found to be useful by the students, the employers and the University, and
- will be continued annually, also during the economic depression.

Future

The University of Vaasa is now considering to extend the Takuuteekkari[®] concept to the next international M.Sc.(eng.) programme on modern energy engineering. Naturally, also other new ideas in co-operation between students, the energy industry and the university level engineering education will be developed and realized in future. Also, a new company concentrating on IT or communications engineering could next be involved in Takuuteekkari[®].

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[1] The Faculty of Technology at the University of Vaasa, www.uwasa.fi/tekniikka

[2] Wärtsilä Finland Ltd., www.wartsila.com

[3] ABB Ltd., www.abb.com

[4] Vacon Ltd., www.vacon.com

Liitteet

[Älä deletoi tätä osanvaihtoa, sillä tämän jälkeen tulee takakansi]

The Learning by Developing – New Ways to Learn 2009 Conference with the focus on Transformative Teaching in Higher Education was held in Laurea Lep-pävaara Unit February 12th – 13th. The conference had 200 participants from over 20 countries worldwide. During the two days the presentations focused on four themes in Transformative Teaching: Teaching and guidance, Learning environments, Leadership and Learning culture. The conference included 60 paper presentations.

The most significant conclusion of the conference is the model of integration of teaching and learning, R&D and regional development as a core method in creating new innovative learning models, a new way to see the Higher Education Institutions as a strong developer of the regions and the society.

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